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S. Hrg. 104–481

U.S.-EURATOM AGREEMENT FOR PEACEFUL NUCLEAR COOPERATION

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HEARING

BEFORE THE

COMMITTEE ON GOVERNMENTAL AFFAIRS UNITED STATES SENATE

ONE HUNDRED FOURTH CONGRESS

SECOND SESSION

FEBRUARY 28, 1996

Printed for the use of the Committee on Governmental Affairs

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U.S./EURATOM AGREEMENT FOR PEACEFUL NUCLEAR COOPERATION

WEDNESDAY, FEBRUARY 28, 1996

U.S. SENATE,
COMMITTEE ON GOVERNMENTAL AFFAIRS,
Washington, DC.

The Committee met, pursuant to notice, at 9:33 a.m., in room SD–342, Dirksen Senate Office Building, Hon. Ted Stevens, Chairman of the Committee, presiding.

Present: Senators Stevens, Glenn, Levin, and Brown.

OPENING STATEMENT OF CHAIRMAN STEVENS

Chairman STEVENS. The Governmental Affairs Committee today will hold this hearing on the U.S./EURATOM Agreement. The United States has exported nuclear materials, equipment, and technologies to the member states of the European Atomic Energy Community, known as EURATOM, for more than 35 years.

This cooperative effort has been governed by an agreement for cooperation in the peaceful uses of nuclear energy, which was first concluded in 1958 and has been amended several times. U.S. and EURATOM negotiators have discussed the replacement of the existing agreement since the early 1980's. Formal negotiations began in 1992.

An agreement was reached among the negotiators in July of 1995. The agreement was approved by the General Affairs Council of the European Union on August 4, 1995, and by President Clinton on November 1, 1995. The new agreement would replace existing agreements with EURATOM as well as bilateral agreements with Austria, Finland, Spain, and Sweden, which are now members of the enlarged European Union.

We are going to have both those who support the agreement and those who oppose the agreement on panels this morning, as well as views of Federal agencies directly involved in the agreement negotiations.

I want to place three letters in the record at this time,[1] if there is no objection. One is from Senator Frank Murkowski, who expresses unconditional support for the agreement, along with Senator Bennett Johnston, who similarly expresses support for the agreement. The third is from Andrew Hyman, an attorney who has written on the constitutional requirements of Congress relative to treaties, compacts, and agreements.

[1] Letters referred to appears on page 377.

We look forward to this testimony today. I would ask that the witnesses keep their comments short. We do have matters on the floor this morning and hope to get through this testimony before we are called to the floor. The entire text of the written testimony will be included in the record.

If possible, we would like to keep the comments from the witnesses to not more than 5 minutes. We will ask questions of not more than 5 minutes ourselves—maybe longer. [Laughter.]

It depends on my good friend from Ohio and former Chairman Senator Glenn.

Senator GLENN. Thank you, Mr. Chairman, I think. [Laughter.]

OPENING STATEMENT OF SENATOR GLENN

Senator GLENN. We do have a lot of ground to cover and I will try and be reasonably brief here, but there are a couple of points I want to make.

I want to thank our Chairman of the Committee, Senator Stevens, for recognizing the importance of today's hearing. I think it would be a disgrace, or worse, it would be a forfeiture of our constitutional responsibility if we let this particular agreement for nuclear cooperation, given its enormous stakes, slip by without even a single hearing. He is fulfilling that responsibility we have.

The American people may be able to rightfully condemn the rising partisanship in the 104th Congress, but the behavior of this Committee on nonproliferation issues has for many years been characterized by cooperation and moderation and bipartisanship and I am glad to see that tradition continuing today.

I also want to extend a special welcome to today's witnesses, both because of their expertise on the various facets of this agreement but also for having agreed to participate on such short notice. I doubt there is a single person in this country who knows more about the U.S./EURATOM agreement than today's witness from the State Department, Fred McGoldrick. The Committee can benefit from such expertise as we examine the many dimensions of this extremely important agreement.

What exactly are the key stakes involved and why should Congress and the American people really care about this? First, this agreement will set the terms for nuclear cooperation between the United States and some 15 nations—someday maybe several more than 15 nations—that belong to the European Atomic Energy Community, or EURATOM. This agreement will be in effect over the next 15 Congresses. It is not a little short deal we are talking about here, the next 15 Congresses, a 30-year arrangement. It will span the terms of seven Presidential administrations.

We need, therefore, to evaluate this agreement very carefully to confirm that it satisfies all of our statutory requirements and, more broadly, that it sets America on the right direction to advance our commercial interests in Europe without inviting new risks of nuclear terrorism and proliferation. We are here to deliberate the national interest, not the needs of special interests.

With painful memories of the World Trade Center and the Oklahoma City bombing still fresh in our minds, it is indeed worthwhile for us to consider very carefully how America controls the weapons-

usable nuclear materials that we export to other countries or that such countries produce using U.S. goods.

Memories of some earlier bombings, such as Hiroshima and Nagasaki, should remind us of the dangers that society would face if a few pounds of highly enriched uranium or plutonium were to disappear into a global black market, a realm that knows no borders, no friends, or so-called rogue nations, no audits, no force of law but the law of force.

This agreement will govern how 15 European nations will use American plutonium, highly enriched uranium, and other dangerous radioactive materials. Under U.S. law, Congress must satisfy itself that the agreement meets several conditions relating to such issues as safeguards, peaceful use, storage, retransfers, U.S. rights of return, alterations of nuclear materials, and the uses of sensitive nuclear technology.

We should focus our attention not on determining whether the U.S. approvals and consents in this agreement are an improvement over the previous agreement but whether these approvals and consents are consistent with existing law and in our long-term interests. We have to determine if the agreement will advance America's nonproliferation policy, and ultimately, we have to determine if the agreement will serve the broad, long-term national security interests of the United States.

We want to examine certain particular aspects of the agreement quite closely. First, America must have the facts. If we have learned anything from the recent flurry of reports from Europe about terrorism and nuclear smuggling, all of us on this Committee should agree that America must know the precise whereabouts and physical condition of the nuclear materials that we export.

Under U.S. law, the International Atomic Energy Agency plays a vital role in safeguarding the peaceful uses of these materials. But we have our own accounts to keep and the value of record keeping, tracking, and auditing is something that Members of this Committee, of all people, surely understand all too well.

Almost 40 years ago, when Congress considered the first EURATOM agreement, the executive branch assured Congress that America would have the ability to conduct detailed audits of how U.S. materials are used in EURATOM. Today, as we face the twin specters of nuclear terrorism and proliferation, Congress has even more reason to favor such detailed record keeping.

America may not be able to dictate the energy policies of other countries but there is a lot we can do to reduce substantially the risks of nuclear terrorism or proliferation involving U.S.-origin nuclear materials. The agreement today may help to solve this problem or it may not. That is one of the reasons for today's hearings.

Second, Congress must examine this agreement to confirm that it fully satisfies the conditions of Section 123 of the Atomic Energy Act and is also consistent with existing U.S. policies to eliminate the use of highly enriched uranium, to prohibit the accumulation of plutonium stockpiles and not to encourage commercial uses of plutonium.

Third, members of the next 15 Congresses and the people that elect them will require access to information needed to oversee the implementation of this agreement. Congress must not be a passive

onlooker but an active participant working closely with the executive branch and eventually with the European Parliament to ensure that this agreement is implemented in accordance with the terms of our common democratic heritage. Though the agreement was negotiated in secret, it must not now be implemented in secret.

Congress should examine closely several other features of this agreement, including the scale of the commercial interests that are involved, what size are they, how they compare with Japan, our other 30-year agreement. We have to look at the U.S. rights to suspend or terminate the agreement. We have to look at the effects of the agreement on our export controls, and we have to look at the extent to which the agreement will serve as a precedent to apply to other countries or blocks of countries.

And another major one is the extent to which our country will have a say over the extension of U.S. consents and approvals to former Warsaw Pact countries that may someday join EURATOM. We do not have a say-so, as I understand it, over who joins EURATOM, and yet those countries coming in would be supposedly given the same rights under this agreement as those already in that were in on the original negotiation.

So this is a 30-year agreement. I opposed the original 30-year agreement with Japan on the idea that that was too long a time, that no one could predict what was going to happen in our own country 30 years down the road, let alone some other nations around the world. So I have reservations here. I am not saying that I am going to be opposed to this, but I do have some serious questions about this that I hope we can get some answers to this morning or in follow-up questions that will be submitted if we do not have time to do them all this morning.

Thank you, Mr. Chairman.

Chairman STEVENS. Thank you very much, Senator Glenn.

I have just been conferring with John Roots, who is my assistant in this matter. He tells me this is day 77 on a 90-day period for Congress to have oversight on this agreement. The time will expire March 14. That is the reason that we held this hearing, so that if there is to be a question about the agreement, there will be time to consider it and try to get around the train wrecks that are taking place on the floor.

Our first witness will be Victor Rezendes, Director for Energy, Resources, and Science Issues at the U.S. General Accounting Office, GAO. Thank you very much. Will you tell us for the record who is with you, Mr. Rezendes?

Mr. REZENDES. I would be delighted, Mr. Chairman. On my right is Gene Aloise, our Assistant Director who is responsible for our nuclear nonproliferation work, and on my left is Keith Rhodes, who is a Technical Assistant Director and an information expert.

Chairman STEVENS. Good morning, gentlemen. Thank you very much.

Your full statement will be placed in the record, Mr. Rezendes. I hope I am pronouncing that correctly.

Mr. REZENDES. Yes, it is exactly correct. I know it is a difficult name.

Chairman STEVENS. We would appreciate your comments.

TESTIMONY OF VICTOR S. REZENDES,[1] DIRECTOR FOR ENERGY, RESOURCES, AND SCIENCE ISSUES, RESOURCES, COMMUNITY, AND ECONOMIC DEVELOPMENT DIVISION, U.S. GENERAL ACCOUNTING OFFICE; ACCOMPANIED BY GENE ALOISE, KEITH RHODES, AND MARTY FITZGERALD, U.S. GENERAL ACCOUNTING OFFICE

Mr. REZENDES. Thanks. I will briefly summarize. It is a pleasure to be here today to talk about the Department of Energy's tracking system, which serves as the primary sources, as you know, Mr. Chairman, of how the United States tracks U.S. nuclear materials. It also serves as an important tool in implementing international agreements, and especially those agreements with the International Atomic Energy Agency as well as EURATOM, which is obviously the focus of this hearing today.

In summary, I want to make two basic points. I want to talk about the limitations of the existing system in terms of lack of coverage of information that needs to be in there. I also want to talk briefly about the modernization that DOE has undertaken with the system and the planning problems we have uncovered which we think will limit the systems success.

First, let me talk about the limitations of the existing system in terms of information. The current system does not have all the information we need to track nuclear materials throughout the world. It does not have the current location of all the materials nor the status of the nuclear material, whether it has been radiated, unradiated, in its various conditions.

That basically is the result of the international agreements we have with foreign countries in terms of the amount of information that they will provide us. In addition, it is also dependent on the foreign countries' and facilities' willingness to provide accurate and complete information.

The State Department is aware of this. They currently are negotiating with EURATOM to provide us access to the EURATOM information system, which would give us an annual report of the amount of U.S. materials in EURATOM countries. However, that would still not provide information by country or by facility.

Further complicating this is the fact in the United States, we have basically three tracking systems which support the United States' efforts to track nuclear materials. The first one is NRC's tracking system, which covers the export licenses to various U.S. companies. The second is the Commerce data base, which accumulates information on exports on a whole host of issues, including nuclear materials, and obviously the Department of Energy's nuclear tracking system, which covers specific quantities going to the various countries.

What we found when we issued a report last year on this issue is that over a recent 15-year period, we have exported roughly 44 million kilograms of nuclear materials to both EURATOM and Japan and other countries. That is a significant trade issue. During a recent 5-year period, that amounts to about $5 billion worth of trade.

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[1] The prepared statement of Mr. Rezendes appears on page 51.

What we also uncovered in doing that was that the data systems are in conflict. For example, NRC, when they looked at the information we had from Commerce, identified three instances of plutonium shipments to three countries that they did not have on record an export license that plutonium had been shipped there. The various agencies are still trying to sort that out, whether that is a paperwork problem or a more serious problem. We do not have the answer to that yet.

Let me switch now to the information system itself, which is really the thrust of my comments today. The original system had been on a mainframe computer for many years and the Department decided to modernize it and bring it into today's technology of a normal PC, as we all have in our offices.

At this Committee's request, in 1994, we issued a report on the status of that program and what we found was that the system was not very well planned or thought out. We made a series of recommendations to the Department of Energy at that time, including the need to get user input, to make sure that the system provides the information that the users are going to need when the new system is up and running. We encouraged them to look at alternatives to upgrading this current system as well as to conduct a cost-benefit analysis of the various options and to put a solid plan in place as to how to proceed.

Unfortunately, the Department of Energy did not heed our concerns. They said basically at that time that the planning had progressed pretty far and it was not cost beneficial to at that time stop and go back and do what we were asking them to do.

Still concerned about the tracking of that system, again at this Committee's request, we issued a report this time in August of 1995. What we found at that point is things had gotten worse rather than better. They had little system documentation in terms of the software being developed. They also did not have any interim deliverables, so the Department did not know the status of the development of the system.

But more disturbingly, we found they had planned to pay for, install, and use the new system without doing acceptance testing of that system to make sure it worked. Obviously, unless you test the system to see that it yields accurate results, you are not going to have any confidence in the results of the information that you are getting. We therefore recommended that DOE immediately terminate any further development of the new system until they had a concrete plan in place to know that the process would work.

Once again, the Department did not heed our recommendations. Unfortunately, last September, the Department turned off the old system and started using the new system. We have a recent report from 2 months ago from the Lawrence Livermore National Laboratory, the technical advisory committee which has responsibility for overseeing this system in the Department of Energy. They have raised pretty much the same concerns that we have and they have concluded that the replacement tracking system faces a high probability of failure because the system has not been completely developed and tested. As a result, that committee recommended that the replacement system not be accepted.

In essence, what we have here is a system that tracks nuclear materials for the United states that has limitations in terms of coverage. In addition, what we have seen is a denigration of the information that we did know 6 months ago because we now have a system that does not yield accurate results.

I have to tell you, Mr. Chairman, that in an auditing environment, we frequently come in after the situation has been done and report on sort of the "who struck John" as to why things went wrong. Not in this case. We were there at this Committee's request on two separate occasions to look at the planning and the implementation and it really escapes me as to why the Department chose not to follow through their own internal orders which say how systems should be developed as well as standard government processes on how you do this.

In 1992, we issued a report on how the Department of Energy manages information systems in general at the Department. This is replete with examples of the kinds of example I am presenting to you today, where we see a lack of top management attention, we see data bases that are duplicative, that are inconsistent, that are not being properly designed and implemented. This is a systemic problem at the Department of Energy.

With that, Mr. Chairman, maybe I should stop and just go into questions and answers, if you would like.

Chairman STEVENS. Does Europe have a similar tracking system?

Mr. REZENDES. Yes. As far as we are aware, the EURATOM countries do have a tracking system. I am not familiar with the details of it in terms of the specifics of how accurate it is, or what kind of information that they have.

Chairman STEVENS. To your knowledge, has it been analyzed as you have analyzed this one?

Mr. REZENDES. I am not aware.

Chairman STEVENS. Tell us, how does the tracking system work?

Mr. REZENDES. Basically, the way the system works, this is done in cooperation with the Nuclear Regulatory Commission, which actually funds about 30 percent of the system. It is basically as the export licenses are given to various vendors of nuclear materials, which are the approval to ship this stuff internationally. That goes into the data base, as well as the Department of Energy then collects what actually went. They have accumulated this both from the actual transactions as well as from intelligence reports in terms of our best knowledge of what is happening throughout the world. It is a combination of information sources.

Chairman STEVENS. Does it track the manufacture and refinement of nuclear material?

Mr. REZENDES. In this country. Once it leaves, it only identifies the country it went to and who was authorized to receive it. Take, for example, in EURATOM, since the entire 15 nations under the EURATOM agreement can freely move nuclear materials between country, we would not know, for example, if we shipped it to, say, Germany, that it is actually in France. We would not know that unless they report it back to us, and there is some reporting back, but it is not required.

Chairman STEVENS. Have you had any reports of problems in the EURATOM system of tracking?

Mr. REZENDES. In their own system? I am really not familiar as to how their system works or whether they have any problems.

Chairman STEVENS. We have what my staff calls the old Lockheed Martin system and the current NMMSS system. What is the difference?

Mr. REZENDES. The old system, which was run by Lockheed Martin, was on a computer mainframe. It was old technology and they basically needed to refresh that and bring it into PC technology, a much more modern system.

In essence, though, while developing any data base—I do not want to minimize this—is difficult and it takes work. It is meticulous, time consuming software development work. But in essence, this is a plain vanilla data base. This is not state-of-the-art stuff. This is the kind of things with just a good management plan, following DOE's own orders of how things should be developed, this should be readily doable. This is not an extraordinary information system.

Chairman STEVENS. Are both systems working now?

Mr. REZENDES. Unfortunately not. What has happened is that in September, the Department of Energy turned off the Lockheed system. They did archive the data. So what we have is 6 months of information that was not put into the old system and they started relying on the new system.

Recently, there has been some testing of the system which has demonstrated that the system is not yielding accurate results. In essence, what they did is three tests of the system, which were actual tests that they had done under the old system. Since this new system was to replicate that, they should be able to extract the same information with the same quantities and the same vendors.

What we found is that they were not able to do that. They were significant deviations in terms of quantities of reportable materials that were missing from the new system versus what was in the old system.

Chairman STEVENS. You made a series of recommendations to the Department of Energy that you terminate the development and replacement of NMMSS and that the Secretary should direct the Office of Nonproliferation and National Security to determine users' requirements, investigate alternatives, and conduct cost-benefit analyses before proceeding with the plan to develop a replacement NMMSS. Were you consulted by the Department of Energy after that recommendation?

Mr. REZENDES. Yes, sir, and we talked to them. We have been talking to them continuously throughout. At that time, they said that the planning—they felt comfortable with the planning, that it had progressed beyond a state that they thought was too difficult to go back and reconstruct the kinds of things that we thought needed to happen.

Chairman STEVENS. This is probably a little bit unfair because he has not testified yet, but are you familiar with the recommendations of Mr. Paul Leventhal?

Mr. REZENDES. I have not seen his testimony. We talked briefly this morning but I have not seen his testimony.

Chairman STEVENS. Let me put it this way. Do you believe there should be conditions upon our approval of this agreement?

Mr. REZENDES. It was not the focal point of our work. We strictly looked at the information systems, the adequacy in terms of coverage of information and the reliability of the system and we have not looked at whether the EURATOM needs any conditions.

Chairman STEVENS. How long would it take you to review the comments to be made here today and give us your recommendations on those conditions that I understand are going to be presented to us today?

Mr. REZENDES. Probably outside your 90-day window. That is a very complex issue and it is going to require judgment calls, I am sure. These are more policy decisions than they are the kinds of things we were looking at in terms of do you have adequate information.

As I said, we were looking strictly at the tracking system, and I would probably point out that this is the same inadequate tracking system we have had for the last 30 years on the agreements with EURATOM. We have never been able, or not had a solid system to identify and track all U.S. source material throughout the world in terms of exactly where it is, which country, which facility, or the state of that material.

Chairman STEVENS. If it is outside your window, by definition, it is not in my building. How can you help us?

Mr. REZENDES. We can provide you whatever information we have.[1] I will be delighted to take a look at all the testimony and get back to you with whatever information we can be of assistance to you. But as I said, the focus of this was strictly on the tracking systems, not on the appropriateness of the EURATOM agreement.

Chairman STEVENS. Thank you. I will ask the staff to make sure that you get the total comments that are made today and we would appreciate it if you can give us an indication of whether you think there is reason for us to delay the agreement in order that those conditions can be analyzed, all right?

Mr. REZENDES. I appreciate that.

Chairman STEVENS. Senator Glenn?

Senator GLENN. Thank you, Mr. Chairman.

Way back in 1982, GAO issued a report about America's ability to track U.S. nuclear materials in other countries, a report that used the following words to describe that system: Incomplete, inaccurate, inadequate, unreliable. Are these terms still applicable today, some 14 years later?

Mr. REZENDES. It is a consistent message, yes.

Senator GLENN. What impact do these defects in DOE's system have upon DOE's ability to gauge proliferation risks? Can they? If those terms still apply, do you think DOE is capable of really gauging proliferation risks as this agreement goes into effect?

Mr. REZENDES. Obviously, Senator, this as a tracking system is a piece. It is one of the tools that are used to track and account for the U.S. source material throughout the world. In addition to that, the safeguards and controls that are in place as a result of

[1] The three GAO reports referred to appear on pages 70, 95, and 140.

international treaties, the IAEA agreements and various other kinds of things, it is difficult to say.

We do know for sure that the current tracking system does not yield the kind of information that the Department probably needs to know where all its information is and the status of those nuclear materials.

Senator GLENN. Congress was told in 1958 that the then-new EURATOM agreement would give the U.S. the right to conduct detailed audits of how EURATOM countries use U.S. fuels. Does this current agreement accomplish that goal?

Mr. REZENDES. We have not looked at that. We do know, for example, that they do do annual audits with three countries, Canada, Sweden, and, I believe, Australia where there is a reconciliation of both the data bases and the amount of materials in those three countries, and we also know, for example, that the Department does go to the European allies and the EURATOM countries and do physical inspections and compliance and make advisory recommendations to them in terms of upgrading security.

Senator GLENN. It is my understanding, too, that you looked at the data bases of Commerce, DOE, and NRC with respect to exported U.S. nuclear materials. It is also my understanding you found some very serious discrepancies in these data bases, is that correct?

Mr. REZENDES. Yes, sir. As I mentioned, one specific case we ran across was—let me first explain the inconsistencies here. I do not want to leave the impression that all three data bases are duplicative of each other and come up with the total amount of exported information. Rather, they are supportive of each other. The NRC has export licenses, the Commerce has export data that was shipped out, and the DOE system is basically a compilation of the tracking of the nuclear materials.

What we did find, though, as I mentioned, is that when we were trying to tabulate how much commerce had been going on in this field, we found out that NSC pointed out that there was plutonium that was on record at Commerce being shipped to three countries, Portugal, Denmark, and Greece, which they had no record of an export license of having authorized plutonium being shipped to these three countries. As I said, they are still sorting out whether that is a paperwork problem or whether there was an authorized license to another EURATOM country and that material then got transferred to those three countries and somehow got reported into the Commerce system.

Senator GLENN. GAO has also found that the U.S. has very little control over the physical security of U.S. materials abroad. If the NRC, for instance, upgrades its physical security standards, would these new standards apply to EURATOM under the new agreement or would the old international standards still apply?

Mr. REZENDES. I do not think I know the answer to that question.

Senator GLENN. Does anybody else want to comment?

[No response.]

Senator GLENN. Did you think about or look into what would happen if a lot of these other nations came into EURATOM, what the impact of that would be? For instance, we have Poland, Slo-

vakia, the Czech Republic, Hungary, Romania, and Bulgaria that may want to come into this agreement, and if they do, as I understand it, we would have no control over their entry into the agreement, is that correct? EURATOM would control their entry into EURATOM and the agreement would apply to them no matter what their background?

Mr. REZENDES. I have not done a legal analysis of the agreement, but superficially, from what I do know, yes, I believe that is consistent with that. But we have not tracked—that was not the focus of our work, the adequacy of the agreement and whether it is complying.

Senator GLENN. Did you look at what would happen if we put a—let us say we can make a resolution of disapproval or this goes into effect.

Mr. REZENDES. Correct.

Senator GLENN. Now, if we passed a joint resolution of approval with a few conditions on it, though, would this have to go back and be renegotiated, or could we do that on our own?

Mr. REZENDES. That is an interesting question. I am just checking with my legal counsel, who is more familiar with this, who has researched this.

Senator GLENN. Legal counsel, would you speak up if you have an opinion on this?

Mr. REZENDES. I do not think he has an opinion on that. We have really not gone through the details of this to address those questions. I really apologize.

Chairman STEVENS. Give us the name of your counsel, please.

Mr. REZENDES. Yes, this is Marty Fitzgerald, Associate General Counsel with GAO. Marty, do you have an opinion?

Mr. FITZGERALD. No, I do not have an opinion in response to your question, Senator Glenn.

Mr. REZENDES. As I said, our work was strictly focused on the tracking system and the adequacy of whether, in fact, we could account for our materials in accordance with even agreements in terms of a system of accounting and controls as required by international laws.

Senator GLENN. What are some implications of your findings with respect to DOE's tracking system, specifically with respect to your testimony which identified this system as playing a, and I quote, "pivotal role" in meeting U.S. treaty and statutory obligations?

Mr. REZENDES. That, we can talk about. We know a lot about that. Keith, do you want to talk about the three tests and how those turned out? He went through in great detail the three tests that I mentioned that Lawrence Livermore and others have done.

Mr. RHODES. Senator Glenn, late last year, there was a test case run at the subcontractor. The test case consisted of a request for three reports, two of which are classified. I have briefed your staff and the Chairman's staff on the details of that.

But to give you an example, the last test, which is unclassified, the request was to get the full inventory accounting of low enriched uranium for the country of Sweden over the life of its reactor program and its involvement in low enriched uranium. The results of the test yielded an error of greater than 100 kilograms of low en-

riched uranium between the old data base that was maintained at Oak Ridge and the new data base being built right now at the subcontractor.

The implications of that are our data would be weak. We are completely reliant on the new system because the old system has been turned off. The old system, even were it brought back on line, would be 6 or 7 months out of date, and therefore the errors that exist in the new system would proliferate throughout any discussions or agreements.

Mr. REZENDES. Let me give you another example here. We had a case where, as I said, the Department tried to replicate a previous request for information from the old system using the new system data and what they found when it was focused on a single material for a single contract, that they were missing 145 records.

What the significance of that is, they were missing 52 percent of the volume of that material in that transaction, which says there are significant problems in both the software and the ability to extract the data that we already know is in the system. That, coupled with the fact, as I mentioned before, the system by design does not have all the information we need to know, does not give us a comfort level that the Department could track all U.S. source nuclear material today.

Senator GLENN. Ever since we have been following this, the Japanese agreement and the development of this agreement, it comes down to a basic of would we have timely warning. Would we get a flow of information such that we would know if there was a diversion big enough to start making nuclear weapons. That is the bottom line and that is the purpose of this whole thing.

Mr. REZENDES. That is correct.

Senator GLENN. If I am reading you correctly—well, I will not put words in your mouth. Do you think we would have timely warning?

Mr. REZENDES. Under the EURATOM agreement?

Senator GLENN. Yes. Will we be able to track the stuff good enough or have information good enough that we would know if there was a diversion where some terrorist group or whatever got enough stuff that they could either make a weapon or they could use plutonium or something to spread around Times Square or whatever without even making a bomb? Would we know of such a diversion?

Mr. REZENDES. I am not prepared to talk about the EURATOM agreement today[1] and whether there is timely notice there but I can talk about the Japanese agreement which we did report on a few years ago. In that case, we concluded there was not.

Maybe I could give you a little bit of history here. I do not want to go into a lot of detail, but the notion, the problem there was that Japan was a non-nuclear weapons state, so the criteria, looking at the legislative history, was a little different there compared to where we are today. It was our notion at that time, in 1988, that there probably would not be—this general consent would probably not be sufficient because Congress had a higher standard for nations that were not nuclear weapons states.

[1] The information referred to appears on page 154.

As you know, since then, there was a resolution introduced in Congress to overturn that agreement, which was defeated. In addition, we have had 8 years of living under that agreement that Congress, while they had an opportunity to change that, has opted not to. It is our impression that that issue seems to be resolved, that Congress is comfortable with these more general consents. Maybe not all members of Congress are comfortable with that. [Laughter.]

Senator GLENN. Do not make that unanimous. My own opinion on that one is that Congress, if individual Members of Congress all took the time to really sit and look at this thing, we might have had a different vote back then. But we went along by people not knowing quite the seriousness of what they were doing and having all the details on it.

Thank you, Mr. Chairman.

Chairman STEVENS. Let me see if I can get the scope of this. This agreement does not cover Iraq, right?

Mr. REZENDES. Correct. It does not.

Chairman STEVENS. It does not cover Iran. It does not cover any party that is not a party to EURATOM.

Mr. REZENDES. Correct. Basically, you have 15 allies in Europe.

Chairman STEVENS. And what we are talking about is not being able to track those who have complied with the agreement, right? We don't have the information to prove they have complied with the agreement?

Mr. REZENDES. What we do not have is a system to track. We do have a system that would track what went through to EURATOM countries as a group. We do not have, once it gets there, the information that tells us where it is in EURATOM. It could be moved from country to country, facility by facility, and the actual status of the materials could change. It could go from one form to another. That information, we would be lacking.

Chairman STEVENS. But all of the information we are tracking is the information that is voluntarily submitted by the parties involved to the agreement?

Mr. REZENDES. It is part of the international agreement as to what information they would provide, and——

Chairman STEVENS. I understand, but we are not talking about any mechanism to check up on whether they have been truthful. We are talking about mechanisms to keep track of what they have done with what they have admitted they placed under the control of EURATOM, right?

Mr. REZENDES. That is basically correct.

Chairman STEVENS. The one system is down. Do you have any estimate of the cost of putting it back up again?

Mr. REZENDES. No. In fact, we are having a hard time getting the estimated costs of what it has cost us to date with this.

Chairman STEVENS. Do you have any estimate of how long it would take to put the Lockheed Martin system back in operation?

Mr. REZENDES. Yes. Keith Rhodes is our technical person here, but what we have is a contract with a firm to do this, with Lawrence Livermore being the overseer of this, and Lawrence Livermore has basically stated not to accept the system because it does not perform. The real question now is, as we do in all Government

contracts, as you know, when you get in so far, you paid so much, you have expertise there——

Chairman STEVENS. Wait a minute. Which does not perform?

Mr. REZENDES. The new system.

Chairman STEVENS. NMMSS or the Lockheed Martin system, or both?

Mr. REZENDES. The NMMSS system does not perform. The Lockheed system had been turned off in September. In our discussions with Lockheed, they said that they do not have the expertise or the ability to bring that system back up again.

Chairman STEVENS. Did you want to say something, Mr. Rhodes?

Mr. RHODES. I was just going to make that point, sir.

Mr. REZENDES. But as I said, it is a cost issue now. We have invested so much with this contractor. He has not performed. It is a question of, do you now go someplace else where you can get the expertise and a higher degree of assurance or do you continue to work with the existing contractor to try to make this system work?

Chairman STEVENS. Senator Glenn?

Senator GLENN. I have just one other question here. Do you think the European system is better than the U.S. system? You have testified the U.S. system now is incomplete, inaccurate, inadequate, and unreliable. Those are quotes.

Mr. REZENDES. I really have no knowledge of the European system in terms of what it covers, the types of information that comes in or the reliability of that information.

Chairman STEVENS. Thank you very much, gentleman.

Mr. REZENDES. Thank you, sir.

Chairman STEVENS. We appreciate it. We will be in touch with you, Mr. Rezendes.

Mr. REZENDES. I appreciate that.

Senator GLENN. If it is all right with you, Mr. Chairman, we may have additional questions to submit to you.

Mr. REZENDES. That would be fine. Thank you.

Chairman STEVENS. Keep in mind that window.

Senator GLENN. Yes.

Chairman STEVENS. Mr. Fred McGoldrick, who is the Principal Deputy Director of the Office of Nuclear Energy Affairs of the Department of State, good morning sir.

We would appreciate it if you would summarize your testimony. We do have your statement to put in the record and we appreciate your cooperation. Do you have anyone with you, Mr. McGoldrick, that you wish to identify for the record?

Mr. MCGOLDRICK. Not at the moment, Mr. Chairman.

TESTIMONY OF FRED McGOLDRICK,[1] PRINCIPAL DEPUTY DIRECTOR, OFFICE OF NUCLEAR ENERGY AFFAIRS, BUREAU OF POLITICAL/MILITARY AFFAIRS, U.S. DEPARTMENT OF STATE

Mr. MCGOLDRICK. Mr. Chairman and Senator Glenn, good morning and thank you for the opportunity to testify before this Committee on the important issue of U.S. peaceful nuclear cooperation with the European Atomic Energy Community, EURATOM.

[1] The prepared statement of Mr. McGoldrick appears on page 178.

The United States has exported nuclear materials, equipment, and technology to EURATOM pursuant to an agreement for cooperation which was first concluded in 1958. That agreement contained three basic nonproliferation conditions. Our European partners were required not to use nuclear materials and equipment provided by the United States for atomic weapons or other military purposes and they were required to apply EURATOM safeguards to the U.S. nuclear materials. EURATOM also agreed to obtain U.S. consent before retransferring U.S.-supplied materials and equipment to third countries outside the community.

The U.S. Nuclear Nonproliferation Act of 1978 established much more extensive and more stringent nonproliferation conditions for inclusion in new agreements for cooperation and required the President to initiate a program to seek to update all existing agreements to include the new conditions. We have now concluded the text of a new agreement with EURATOM.

In approving the agreement for signature, the President has determined as is required by law that the performance of the agreement will promote and will not constitute an unreasonable risk to the common defense and security of the United States. In making this determination, the President took into account the judgment of the Secretary of Energy and the Secretary of State that the advanced long-term consent to reprocessing in EURATOM will not result in a significant increase in the risk of proliferation.

Under the procedures specified by the Atomic Energy Act, the agreement must lie before the Congress for 90 days of continuous session before it may go into effect. The old agreement expired by its own terms on December 31, 1995. Thus, the U.S. is not now in a position to export nuclear materials and equipment until the new agreement goes into force.

The new agreement contains all the relevant conditions and consents required by Section 123 of the Atomic Energy Act. The requirement for safeguards in perpetuity is contained in Articles 6 and 14 of the new agreement. The requirement for full-scope IAEA safeguards in the non-nuclear weapons state members of EURATOM is contained in Article 6 of the agreement.

The requirement that items subject to the agreement will not be used for research on or development of a nuclear explosive device or for any military purpose is contained in Article 7. The requirement for the right to require the return of items subject to the agreement if EURATOM or a member state terminates or violates a safeguards agreement or if EURATOM or a non-nuclear weapons state detonates a nuclear explosive device, that right of return is set forth in Article 13–2. The requirement for adequate physical protection of nuclear materials is in Article 11.

The requirement for the right of the United States to approve the retransfer of items subject to the agreement to a third party is found in Article 8–1. The requirement for U.S. consent to reprocessing, enrichment, and alteration in form or content is found in Articles 8–1 and 8–2. The requirement for U.S. approval of facilities for the storage of strategic nuclear materials is contained in Article 8–3. Thus, the new agreement meets all the U.S. statutory requirements.

In addition to these requirements of law, the agreement also contains a requirement for the application of EURATOM safeguards and a requirement for fallback safeguards.

In addition, it contains a guarantee that all the nuclear materials that were subject to the previous agreement with EURATOM will become subject to the stringent conditions of the new agreement. This guarantee is an important feature of the new agreement, because it accords the United States for the first time the right to approve reprocessing and other sensitive activities involving U.S.-obligated materials that had been accumulated over the past 35 years and were subject to the previous U.S./EURATOM Agreement. In other words, we are applying the new NNPA conditions retroactively to the materials that were exported under the previous agreement.

While incorporating the extensive nonproliferation conditions of the NNPA in the new agreement, the United States also sought to provide a stable basis for U.S./EURATOM nuclear cooperation. Toward those ends, the agreement provides EURATOM with advance long-term consent for specified reprocessing or alteration in the form of content of certain nuclear materials subject to the agreement so long as U.S. legal criteria are met, including criteria related to safeguards and physical protection.

We have made this arrangement in recognition of EURATOM's impeccable nonproliferation credentials and the advanced sophisticated nature of its nuclear program. The agreement imposes stringent conditions respecting the activity for which this advance long-term consent is given.

The nuclear material involved must at all times be subject to international safeguards and physical protection satisfactory to the United States and if a facility is to be added to the European delineated program to which long-term advance consent applies, EURATOM must provide the United States with assurances and information on the safeguards and physical protection arrangements for the facility.

The U.S. may also suspend its advance long-term approvals with respect to the delineated program if it determines that their continuation would result in a significant increase in the risk of proliferation or in a threat to the national security.

In our view, the new agreement advances the economic, political, and nonproliferation interests of the United States. Without the agreement, the United States Enrichment Corporation could possibly lose sales approaching $2 billion over the next decade. In this regard, the new agreement with EURATOM is important for implementing the agreement between Russia and the United States to purchase low enriched uranium from 500 tons of highly enriched uranium from dismantled Russian nuclear weapons, as the U.S. Government agent for executing this agreement, USEC, will need the European market to sell this material.

Politically, failure to renew the agreement would constitute a serious setback to U.S.-European relations and to the Atlantic Alliance, which has so effectively served the interests of both the United States and Western Europe over the last five decades. The new agreement is essential to reaffirm and strengthen our relations

with our allies at a time when new challenges threaten global security in the post-Cold War world.

The agreement is also critical to effective cooperation with our European allies to preserve and strengthen the nonproliferation regime. As I have noted, the new agreement itself greatly expands U.S. nonproliferation controls.

But the nonproliferation implications of this agreement go beyond the controls and conditions in the agreement itself. U.S.-European collaboration has been essential in establishing all aspects of the existing international nonproliferation regime, including the IAEA and its safeguard system, the Nuclear Suppliers Guidelines, the Zangger Committee export controls, the Physical Protection Convention, and most recently the indefinite extension of the Treaty on NonProliferation of Nuclear Weapons.

U.S.-European cooperation will be equally vital to meeting the nonproliferation challenges ahead, including the negotiation of a comprehensive test ban treaty, the fissile material cutoff treaty, the strengthening of IAEA safeguards, and the establishment of effective cooperation to prevent nuclear smuggling. The continued close collaboration of the United States and the Europeans in all these areas will play a key role in strengthening the international regime which will promote the benefits of peaceful nuclear energy and at the same time reduce the risk of nuclear weapons proliferation to an absolute minimum.

The new agreement provides the foundation upon which this collaboration will take place. The agreement is in our mutual interests and I strongly recommend favorable Congressional review. Thank you, Mr. Chairman.

Chairman STEVENS. Thank you very much.

Let us go now to Dr. Terry Lash and Mr. Norman Wulf. Dr. Lash is Director of the Office of Nuclear Energy of DOE and Mr. Wulf is the Deputy Assistant Director of the Bureau of Nonproliferation of the U.S. Arms Control and Disarmament Agency. Gentlemen, it is nice to have you here, too, if you would proceed with your statement. Dr. Lash, you have someone with you?

Dr. LASH. Yes, I do, Mr. Ken Sanders, who is in our Office of Nonproliferation and National Security.

Chairman STEVENS. Good morning, Mr. Sanders.

Proceed, Dr. Lash.

TESTIMONY OF TERRY R. LASH,[1] DIRECTOR OF THE OFFICE OF NUCLEAR ENERGY, SCIENCE AND TECHNOLOGY, U.S. DEPARTMENT OF ENERGY; ACCOMPANIED BY KEN SANDERS, U.S. DEPARTMENT OF ENERGY

Dr. LASH. Thank you, Mr. Chairman and Senator Glenn. I appreciate the opportunity to be with you this morning to discuss this important agreement. With your permission, I will just read a short statement and submit the fuller testimony for the record.

The U.S./EURATOM cooperation has been beneficial over the past four decades. This relationship has encouraged the safe use of nuclear power for peaceful purposes. It has also been critical for strengthening the worldwide effort to halt the spread of nuclear

[1] The prepared statement of Dr. Lash appears on page 190.

weapons. The Department of Energy recognizes the importance of entering into a new EURATOM agreement and has supported the Department of State in negotiations with the European Union.

In its early stages, the U.S./EURATOM cooperation provided for the transfer of U.S. light water nuclear reactor technology and enriched uranium fuel for use in European reactors. Today, we recognize the advanced stage of the EURATOM nuclear industry, which provides a complete range of manufacturing, servicing, training, and other functions needed to support and expand the already substantial European nuclear power program. It is very important to allow the U.S. nuclear industry to continue to compete in this advanced European nuclear power market.

In addition, cooperation on the peaceful uses of nuclear energy has allowed the United States and EURATOM to collaborate closely on strengthening the barriers to the spread of nuclear weapons, as well as to cooperate on an array of nuclear safety initiatives. All of the EURATOM states are parties to the Nuclear Non-Proliferation Treaty and all of the non-nuclear weapons states apply International Atomic Energy Agency full-scope safeguards to their nuclear facilities.

The proposed new U.S./EURATOM agreement has incorporated all the requirements of the Nuclear Nonproliferation Act, including the U.S. consent for specified enrichment, retransfers, reprocessing, alteration in form or content, and storage of specified nuclear material and for transfers of non-nuclear material and equipment of U.S. origin on an advanced, long-term basis.

The Secretary of Energy has determined that these advance consent arrangements will not result in a serious threat to the security of the United States or a significant increase in the risk of proliferation. The Secretary's judgment is supported by several factors, including the commitment of EURATOM to the application of effective, comprehensive safeguards in the European Union, not only by the International Atomic Energy Agency, but also by the regional safeguard system established by EURATOM itself.

This judgment is further supported by the strong nonproliferation credentials of the European Union and its member states, their adherence to the Treaty on the Non-Proliferation of Nuclear Weapons, their lack of incentives to acquire nuclear explosive devices, the close technical and economic ties among member states, and the intimate and important relationships that the United States has with the European atomic energy community and each of its member states. The member states of EURATOM will remain stable, secure, and closely tied to the United States during the life of the Agreement.

In summary, the Department of Energy has concluded that the Agreement will further the interests of the United States in nonproliferation, nuclear safety, international energy cooperation, and international trade and will strengthen relations with allied and other friendly states in Europe and with Japan.

That concludes my oral remarks. I would be happy to answer questions, as will Mr. Sanders, at the conclusion of the testimony.

Chairman STEVENS. Thank you very much.

Mr. Wulf?

TESTIMONY OF NORMAN A. WULF,[1] DEPUTY ASSISTANT DIRECTOR OF THE BUREAU OF NONPROLIFERATION AND REGIONAL ARMS CONTROL, U.S. ARMS CONTROL AND DISARMAMENT AGENCY

Mr. WULF. Thank you, Senator Stevens.

Entry into force of this agreement will result in a significant expansion of U.S. controls beyond those contained in the recently expired agreement. In particular, the old agreement, as Mr. McGoldrick indicated, was limited to provisions on peaceful use, safeguards, and no retransfer without U.S. consent.

In contrast, the new agreement includes, in addition to these guarantees, U.S. consent rights over reprocessing, enrichment, alteration in form or content, and storage of weapons-usable material. We are confident that U.S. nuclear nonproliferation and other national security interests are protected through the provisions allowing suspension of the U.S. consent for reprocessing and other activities.

The nuclear nonproliferation commitments of EURATOM member states, the longstanding stability of their political system, their long association with the United States, including 11 of the 15 being in NATO, and the added guarantee of the EURATOM safeguard system all combine to offer a very high degree of confidence in the reliability of the peaceful use assurances contained in the agreement.

We have no reason to doubt that existing EURATOM members will ensure that any new members share the same degree of commitment to and acceptance of nuclear nonproliferation norms and practices, including effective nuclear material accounting and control systems and responsible export controls.

Unfettered nuclear cooperation is particularly important to European members because they rely on nuclear power for approximately 35 percent of their electrical production. In France alone, the figure is 75 percent. This new agreement should help to promote a stable, civil nuclear supply relationship between the United States and EURATOM for the next 30 years.

Another important factor that ACDA considered in making its positive recommendation on the agreement is the relationship of this agreement to the administration's concern about the security and stockpiling of civil plutonium. One primary benefit of the agreement is that it will bring a large quantity of plutonium and highly enriched uranium under U.S. consent rights for the first time and thus will help maintain and promote the highest possible standards for the security of such weapons-usable material. This, we believe, is an important advance over the current situation.

While it is the administration's policy not to encourage reprocessing anywhere, it is clear and was clear from the start that there would have been no agreement without a U.S. willingness to extend to EURATOM the same long-term consent arrangements that had been provided to Japan. Had there been no agreement, EURATOM would have continued to reprocess in any event and we would have lost the opportunity to obtain new controls on sensitive

[1] The prepared statement of Mr. Wulf appears on page 201.

nuclear fuel cycle activities in EURATOM where U.S.-controlled nuclear material is present.

It should also be noted that some members of EURATOM, together with Japan, Switzerland, Russia, China, and the United States, have been engaged since 1994 in an effort to develop voluntary guidelines related to transparency and security of stockpiles of civil plutonium. The administration's view is that this effort should also deal with ways to limit and ultimately reduce these stockpiles.

All participants understand the importance of transparency and reassuring the public that the best possible security measures are being applied to the stockpiles of plutonium, but there is no agreement yet on finding ways to limit these stockpiles. This is not surprising, as each country believes that its domestic nuclear energy policies are sovereign matters and many other countries have different views about the degree of proliferation risk associated with stockpiles of civil plutonium.

I mention this initiative to underscore that the administration continues seeking ways to limit civil reprocessing consistent with nonproliferation and energy security requirements. Entry into force of the new agreement should strengthen European cooperation with key EURATOM states in this area.

In conclusion, the entry into force of this agreement will serve important foreign policy and national security interests of the United States, with particular emphasis on civil nuclear cooperation and nuclear nonproliferation matters. It fully conforms with statutory requirements and will strengthen cooperation between the United States and EURATOM members to ensure effective controls on plutonium and highly enriched uranium and it helps to reinforce our long history of cooperation on the NPT, IAEA safeguards, nuclear export controls, and other important elements of the nuclear nonproliferation regime.

In conclusion, Mr. Chairman, I urge favorable review of this agreement. Thank you very much.

Chairman STEVENS. Gentlemen, you heard the testimony of Mr. Rezendes and his colleagues. Under the circumstances that the tracking system apparently is not working, according to GAO, does that in your opinion mean there are not adequate safeguards under this agreement to prevent the diversion of nuclear material without our knowledge? Mr. McGoldrick?

Mr. MCGOLDRICK. Yes, thank you. Mr. Chairman, this agreement involves the application of safeguards by both the International Atomic Energy Agency and by EURATOM. EURATOM has its own separate regional multi-national safeguard system. So it goes far beyond a tracking system. EURATOM actually inspects the nuclear facilities to determine that the material there is being used for the purposes intended. Similarly, the IAEA inspects these facilities to ensure in the non-nuclear weapons states to ensure that nuclear material is not being diverted for nuclear explosive purposes.

So I think what we are talking about here is actual inspection, not just reporting of transactions that are taking place, but actual inspections by two different international agencies in which we have great confidence.

Chairman STEVENS. Dr. Lash?

Dr. LASH. Mr. Chairman, I would like to concur in Mr. McGoldrick's remarks, but in addition, I would like Mr. Sanders, whose area of expertise it is, to address some of the questions raised by the GAO about the Department's tracking system. With your permission, I would also like to submit a more lengthy response,[1] because we have taken the GAO criticisms and comments very seriously over the past month and believe that we have addressed them appropriately.

Chairman STEVENS. Mr. Sanders?

Mr. SANDERS. Thank you, Mr. Chairman. In 1993, in the time frame of November, the Department of Energy made a decision to make a change from the old NMMSS, our tracking system which was at that time nearly 30 years old and at the end of its life cycle, to a new system of better technology, quicker, faster, flexible, which would adjust to changes which we would expect to have to do under a new agreement such as the U.S./EURATOM agreement and at half the cost.

To date, we believe that was a correct decision. From November 1994 to September 1995, the old system and the new system parallel processed data to assure that we could make a smooth transition. This was alternate day processing of the same data. Between February and May of 1995, the GAO conducted its review.

In April of 1995, the tracking system software was placed under a configuration management plan. In July of 1995, the old system and the new system began duplicating reports sent to the users, again, to assure that there could be an effective and smooth transition when the decision was made.

In August of 1995, the GAO report[2] was issued based on their visits during February through May of 1995. Also in August of 1995, our contractor, Lawrence Livermore National Laboratory, established a technical advisory committee to help design, develop, and witness independent testing of the system requirement specifications of the new system.

In September of 1995, the DOE appointed an Independent Verification and Validation Team to do an independent review. In November, that draft final report was available and gave a favorable response. Also in September of 1995, the DOE appointed an independent Information Management Project Review Team to do a review against DOE orders and requirements. That report was available a couple of months later and the results were favorable.

In November of 1995, the Department of Energy convened a NMMSS users meeting to get feedback directly, and we believe that was a very successful meeting. Within a day, a NMMSS Steering Committee was convened by the Department of Energy representing those users but from a select number of them to review and identify any problems, and we believe that meeting was very successful.

As a side comment, there also was a security survey conducted by the Department of Energy which was fully satisfactory.

Let me make one final comment, if I may, on the GAO report which was issued in August. The Department of Energy conducted

[1] The letters referred to appear on page 207–210.
[2] The GAO report appears on page 140.

a very careful review of the conclusion and recommendations in that report and concluded that we could be confident to meet and eventually exceed the user requirements for a tracking system. We put documents in place which the GAO said were missing. We put quality assurance plans in place. And, in fact, we appreciated the recommendations and identification of this documentation that was made in the GAO report. Briefly, this documentation included a program management plan, a software configuration management plan, and a quality assurance plan.

I think, to date, we are successful in achieving a 50 percent reduction in the cost of operating the new NMMSS system and a corresponding decrease in the number of staff that were necessary. We have upgraded the technology successfully, from an old mainframe, 30 years old, to new, off-the-shelf, commercial technology of software and hardware.

It is flexible to change and we anticipate that there will be changes in the coming 30 years under agreements that we will have to adjust to. We have expanded the capability in terms of tracking, or plan to expand the capability in terms of tracking foreign material, as well, as a related matter to the NMMSS program. And finally, we believe that we made a timely transition on September 1 to the new system, which is quicker to respond to ad hoc requests for reports.

Thank you, Mr. Chairman.

Chairman STEVENS. Mr. Wulf?

Mr. WULF. My answer would be the same as Mr. McGoldrick's answer, to a large extent. The issue, as we see it in ACDA, is not so much whether there is a danger of U.S. material being misused, although that is clearly very important. The issue is whether any nuclear material in EURATOM is susceptible to being misused. The way the system presently works is the NRC would license the export, for example, of LEU. They would notify both EURATOM and the IAEA. Upon receipt, EURATOM would also notify the IAEA of the receipt of this amount of material. Thereafter, both IAEA and EURATOM track that material. The United States does not. And, indeed, the NMMSS system, as I understand it, is not designed to track the material once it leaves U.S. shores.

So the important thing is to make sure that the IAEA system and the safeguards and the standards for protection apply to all nuclear materials in EURATOM. It is not so important, although clearly desirable, to ensure that U.S. material in particular is not diverted, but the key thing from a nonproliferation point of view is making sure that none is diverted.

Chairman STEVENS. Gentlemen, it has been noted here twice that the old agreement expired on December 31, 1995, and that the United States is not in a position to export nuclear material and equipment until the 90 days has expired. However, I am told that on February 20, 1996, the U.S. Nuclear Regulatory Commission issued a decision that lifted the January 1, 1996, order suspending licenses to export nuclear reactor components, substances, and items to EURATOM. What is the impact of that?

Mr. MCGOLDRICK. Mr. Chairman, nuclear materials and equipment may only be exported pursuant to an agreement for cooperation.

Chairman STEVENS. What about the substances?

Mr. MCGOLDRICK. The components are governed by another provision of the law, Section 109–B of the Atomic Energy Act, which sets forth three conditions for the export of those components. They can be exported outside an agreement, so an agreement is not necessary for the export of those components. That is what the NRC letter was dealing with, just the components. It was not dealing with nuclear material and equipment, which we may not export until the new agreement goes into effect.

Chairman STEVENS. Let me ask you all just one general question. You have heard Mr. Rezendes's testimony and you are aware of the GAO reports. Can you assure the Congress and the Senate specifically that there are adequate tracking and storage safeguards to prevent the diversion of nuclear material that is subject to this agreement?

Mr. MCGOLDRICK. Let me say that the whole question of tracking has to be separated from assurances against diversion. What tracking does is tell us what material is subject to our agreement with EURATOM, or, indeed, with any other country. It tells us what we have exported and what has been retransferred, so we will know how much material is subject to the agreement, what types, the isotopic composition, and so on and so forth. That is important to know so that we will know what is subject to the agreement.

But the question of diversion or theft is an entirely different question because a tracking system is not going to prevent that or even let us know about it. There are two systems in effect. One is a safeguard system, and as I said, there are at least two safeguard systems applied in Western Europe. One is by the IAEA and one is by EURATOM to detect diversions by states. In addition to that, each member state has physical protection requirements and those are required in the agreement—they must be up to international standards—to provide protection against theft or sabotage of nuclear materials.

So I think we have to make a real distinction between what the tracking system is and what it does and what the safeguard system and the physical protection systems that are in place in Europe.

So in sum, that with the various safeguard systems and the physical protection regimes in Europe, we feel very confident in their ability to detect diversion and prevent theft and sabotage.

Chairman STEVENS. Do you agree with that, Dr. Lash?

Dr. LASH. Yes, I do, completely.

Chairman STEVENS. Mr. Wulf?

Mr. WULF. Yes, sir.

Chairman STEVENS. Thank you very much.

Senator Glenn?

Senator GLENN. Thank you, Mr. Chairman.

Mr. McGoldrick, given the record of European suppliers in Iraq and Pakistan and elsewhere and scant European support on fuel cycle on China issues, why do you say that Europe's credentials are, in your word, impeccable?

And I would add another thing to it, too. Out of this morning's *Washington Post*, there is an article entitled, "U.S. Asks China to End Shipments," with a subheading, "Nuclear Exchange with Pakistan at Issue." Just an excerpt of one paragraph out of the article—

I will not read the whole thing—"Although U.S. officials said Washington has recently begun discussions with France, Germany, Britain, and other nations about imposing joint sanctions against China in the event that no deal can be reached, few U.S. officials hold out hope of getting much support. 'We have not had much success in getting them to punish proliferators,' one official said of such key U.S. allies."

You are saying their credentials are impeccable?

Mr. MCGOLDRICK. Let me say, Mr. Chairman, that the member states of EURATOM are parties to the NPT, accept full-scope safeguards, adhere to the Nuclear Suppliers Guidelines, the Physical Protection Convention, and the whole international nonproliferation regime.

You mentioned earlier about the export of items to the Middle East, and there is no question that historically dual-use items from Europe have gone to places where they should not have gone and this is due to the fact that the Europeans did not have the legal regimes to control dual-use exports for nonproliferation reasons. However, in 1992, the Nuclear Suppliers Guidelines adopted dual-use export controls and they have a list of dual-use items which now require an export license.

In addition, European states have adopted what is called a catch-all clause, which means that even though an item may not be on a control list, either a trigger list, nuclear control list, or a dual use list, that if the exporter knows or has reason to know that this is going to a program in support of weapons of mass destruction, including nuclear weapons, then that export will be subject to export license. So there has been a lot of progress among the Europeans to strengthen their export controls in the dual-use area.

Senator GLENN. Run through for me what would happen under the agreement if the U.S.—let us say it is in effect, has been in effect a couple of years and all at once we get information here that a member of EURATOM was engaged in proliferation activity. What would be the procedure there? Can we force EURATOM not to ship U.S.-origin material to that country until the issue is resolved?

Mr. MCGOLDRICK. Absolutely. We have a clear and unambiguous right to consent to the retransfer of any item subject to this agreement to a third country. So Europe may not, under the terms of the agreement, export such an item to a third country without our approval.

Senator GLENN. This would be a country in EURATOM, though. This is a country in EURATOM.

Mr. MCGOLDRICK. I am sorry, exporting an item from one EURATOM country to another, or an export outside of EURATOM?

Senator GLENN. If a member of EURATOM became engaged in proliferation activity, what would happen then? They are a member of EURATOM now. What control do we have over our material?

Mr. MCGOLDRICK. I am still not quite sure what you are asking, but if it involves——

Senator GLENN. We have 15 members of EURATOM, I believe is the figure, right? Fifteen?

Mr. MCGOLDRICK. That is correct.

Senator GLENN. Let us say one of them gets to be sort of a rogue Nation here, and that is not beyond the realm of possibility when the new membership one of these days may be Poland, Slovakia, the Czech Republic, Hungary, Romania, and Bulgaria. What happens here if one of the member countries now starts developing some things that we do not like? What is our control?

Mr. MCGOLDRICK. If their actions involved a violation of the agreement or if they engage in activities which would present a proliferation risk to the United States or jeopardize the national security, we could, for example, suspend our consent rights. But let me just——

Senator GLENN. No, wait. Let me follow that through now.

Mr. MCGOLDRICK. Sure.

Senator GLENN. Could we force EURATOM nations not to ship U.S.-origin material to that country just by sending a message saying, stop and desist until this is resolved, or will they go on while we fight it?

Mr. MCGOLDRICK. We have always treated the European Community as one entity. It has been long——

Senator GLENN. I know, but that is the problem. Everybody may not be a good guy within that community one of these days.

Mr. MCGOLDRICK. This is true, but there is a web of nonproliferation controls in Europe, not only the nonproliferation treaty but the EURATOM treaty, IAEA safeguards, EURATOM safeguards, which would, I think, prevent a bar to any aberrant nonproliferation behavior.

Let me just address——

Senator GLENN. As I understand your answer, though, we would not have the right to just say, stop. You cannot transfer U.S. material to that country.

Mr. MCGOLDRICK. We cannot tell the European Community that they may not transfer an item from one member state to another any more than they could tell us that we cannot transfer nuclear material from New Jersey to New York. We treat EURATOM as a single entity. And for nonproliferation purposes, these countries are a unity. They all belong to the EURATOM treaty. They all belong to the nonproliferation treaty.

Let me, if I may, address the question that you raised about the East European countries.

Senator GLENN. About the what? I am sorry.

Mr. MCGOLDRICK. The East European countries becoming a member of EURATOM. It is not clear when and if such countries will become a member.

Senator GLENN. No, but it is not certain that they will not, either.

Mr. MCGOLDRICK. No, it is not. They have applied, and there are certain criteria which the European Community uses to accept membership, including political democracy, market economies as well as control of the customs areas. But in addition to that, there are nonproliferation requirements for joining the community. One is that they become a party to the EURATOM treaty and all the controls and conditions that involves, including the application of EURATOM safeguards. They must be party to the NPT. They must join the Nuclear Suppliers Guidelines.

In addition to that, were they to become members of the European Community, you noted that they would have the same rights as in the U.S./EUROTOM Agreement, that is correct. They would also have the same obligations. They would be subject to all the controls and conditions of the U.S./EURATOM Agreement, including all the physical protection requirements, the safeguards requirements, the consent rights, and so on.

I would also point out that one of our objectives is to integrate these countries into the West and to Western institutions, including the nonproliferation regime.

Finally, I would point out that we already have agreements with many of these countries. We have agreements for cooperation with Poland, the Czech Republic, Slovakia, Hungary. We are about to have one with Bulgaria. The Congress has just reviewed that. I think we will be having one with Romania shortly.

Senator GLENN. But it would be up to EURATOM itself, not us, up to EURATOM itself as to admitting people into membership?

Mr. MCGOLDRICK. Absolutely. I mean, we would have no more say over who joins the European Community than they would over who joins the United States.

Senator GLENN. Let me move along, because I have several questions here I wanted to get through if we can, if time permits.

State once tried to put what were called equivalent safeguards into the NPT. U.S. law says there will be IAEA safeguards. Why are the equivalent safeguards now in this agreement?

Mr. MCGOLDRICK. I am not sure I understand what you mean by equivalent safeguards.

Senator GLENN. That was the term that was used for something that was supposed to be equivalent to IAEA safeguards but we did not think they really were. The first U.S. draft of the NPT, as I understand what staff tells me, was submitted with IAEA "or equivalent" safeguards, but that was not in the final version, though, but State wanted that originally as NPT "or equivalent" safeguards. It is my understanding that that would now be permitted in this agreement.

Mr. MCGOLDRICK. I am sorry, I am really confused by your question.

Senator GLENN. Let me move on. We can submit this later. We will submit this to you later and we can get an answer later. I would like to get it for the record.

Mr. MCGOLDRICK. We will be happy to supply you with an answer for the record.

Senator GLENN. Good. NPT safeguards are revocable, so how are they perpetual under U.S. law? Anybody can get out of NPT with a 90-day notice.

Mr. MCGOLDRICK. That is true, but under the terms of the agreement, EURATOM agrees to maintain safeguards in perpetuity. So they would have an obligation to us to——

Senator GLENN. Even if they wanted out of NPT otherwise, they would still have to abide by it once they accept our material?

Mr. MCGOLDRICK. That is correct, and we also have in the agreement a provision that if for any reason the IAEA is unable to apply safeguards, which is highly unlikely, there are EURATOM safeguards being applied, and even if they are not being applied, again,

which is highly unlikely, then there is a provision in the agreement that we would have bilateral safeguards.

Senator GLENN. This thing of ex-Warsaw Pact States coming in automatically without our control bothers me a little bit. You have addressed this somewhat, and in the interest of time here, we may want to submit another question on that and have you address that a little bit later.

Why does the agreement fail to recognize the continued effect of U.S. laws and regulations? The agreement requires the U.S. not to use export licenses "to restrict trade," requires us to process licenses quickly, and sets "prevention of nuclear trade" as grounds for termination, and yet it is your feeling that that is all still in accord with our export control law?

Mr. MCGOLDRICK. Yes, Mr. Chairman. All exports from the United States of nuclear materials must be made in accordance with U.S. laws and regulations. That is simply a statement of fact.

Senator GLENN. It says in this agreement, though, the U.S. cannot use export licenses to restrict trade. We have to process licenses quickly and it sets prevention of nuclear trade as grounds for termination.

Mr. MCGOLDRICK. That is right. This is a provision that we put in the agreement because, very frankly, the Europeans have been very concerned over the years about the reliability of the United States as a cooperating partner for a variety of reasons. In order to reach agreement, we had to provide them with assurances that we were not going to take unnecessarily long times in approving export licenses and we were not going to try to prevent trade.

Now, I would point out in this connection that this agreement does not contain an obligation to export. There is no obligation for us to supply anything. It is only a framework which permits the export of nuclear materials and equipment. The United States must still issue export licenses and other approvals for individual exports.

Senator GLENN. U.S. law requires safeguards on all plutonium. Yet, as I understand it, this agreement exempts PU238 from safeguards. Does that not violate U.S. law?

Mr. MCGOLDRICK. No, Mr. Chairman. This is a standard international practice because plutonium 238, when it is 80 percent of the material, is, in fact, exempted from IAEA safeguards because it is not weapons-usable material.

Senator GLENN. No, but our law requires all plutonium—all plutonium to be under safeguards.

Mr. MCGOLDRICK. But the international safeguard system——

Senator GLENN. No, I am not talking about the international safeguards. I am talking about U.S. law. It says all plutonium will be under safeguards, yet in this agreement you exempt 238.

Mr. MCGOLDRICK. I think I would have to go back and look into the details of the regulations, but I think that we do exempt plutonium 238 from safeguards. Some of this plutonium 238 is used in such things as pacemakers and so on, so it makes no sense to apply safeguards to plutonium 238 when it is——

Senator GLENN. But do you think you are going to have to ask for a legislative change then to the law, because it says all——

Mr. MCGOLDRICK. No, Mr. Chairman, I do not. I will look into the precise regulations, but I would——

Senator GLENN. Do you accomplish this by a waiver, or how do you do it, then?

Mr. MCGOLDRICK. I do not think that this is required. I would have to look into the regulations.

Senator GLENN. If you could do that and get back to us with it so we would have your opinion on that for the record, I would appreciate it.

Mr. Wulf, ACDA refers to Europe's exemplary nonproliferation credentials. Do you think the UNSCOM inspectors in Iraq would likely agree with that?

Mr. WULF. No, sir, and I certainly would not agree if we were talking about European export practices, say, in the late 1980's or early 1990's, with the use of that adjective. But I think there has been a sea of change in European attitudes toward export controls. There are still areas where we disagree and there is still an occasional export that occurs that we would not approve of, but I would say that, by and large, the term "exemplary" is appropriate.

Senator GLENN. This gets a little bit into my previous question of Mr. McGoldrick, but given ACDA's historic role in making full-scope IAEA safeguards an NPT requirement, ACDA's record since as an interagency advocate of the universality of IAEA safeguards and ACDA's longstanding opposition to the notion of these equivalent safeguards, why did ACDA first in 1987 with Japan and again in 1995 with EURATOM endorse a concept of equivalent safeguards as a substitute for IAEA safeguards?

Mr. WULF. I share some of the confusion that Mr. McGoldrick does about the thrust of that question.

Senator GLENN. All right.

Mr. WULF. But certainly my recollection and understanding of both this agreement and the 1987 agreement with Japan is that what we prefer and what we seek is IAEA safeguards.

Senator GLENN. OK.

Mr. WULF. What we are prepared to accept if, at some——

Senator GLENN. We may want to follow up with a question on that that you can answer for the record.

Mr. WULF. I will.

Senator GLENN. On the new members problem here, ACDA's assessment devotes two paragraphs to the implications of ex-Warsaw Pact States joining EURATOM. How could ACDA assess future proliferation risks if we do not even know what countries will be in EURATOM? How do we make an assessment of that?

Mr. WULF. We know the standards that EURATOM applies for membership in EURATOM and those standards are very high. We believe that if they could get some of these additional countries in Eastern Europe to come into the EURATOM agreement, it would be a nonproliferation plus because they would draw them into the high standards that EURATOM maintains.

Senator GLENN. Dr. Lash, on what issues in the Agreement was DOE consulted by the State Department during the negotiations?

Dr. LASH. We were actively involved in consulting with the State Department. I do not think it would be possible in a moment to list

every one, but we were actively involved, more than one staff member at different times.

Senator GLENN. Was there any disagreement by DOE with the outcome of the negotiations?

Dr. LASH. As I said, the Secretary and the Department accepts the Agreement as it was concluded.

Senator GLENN. Yes, I know, but were there disagreements that you overlooked, that you said, we will give on that and go ahead and agree with you on this and give our approval, but there were things you would rather not have had or had in a different way in the agreement?

Dr. LASH. I think there is the possibility that there were staff members who wanted something in the Agreement that did not end up in the Agreement. One in particular that came into discussion was the length of the Agreement. There was a compromise between the U.S. position and the European position. We find it quite acceptable.

Senator GLENN. The bottom line to me still comes back to where we have been for a couple of decades now, or a decade and a half, anyway, on this thing. Do you, as a nuclear expert, which you are, think that we will have timely warning if there would be diversions under this?

Dr. LASH. I believe we will. I share the other panel members' confidence in the European system and in the International Atomic Energy Agency. I have visited some of the facilities. I have met with European officials. I have participated substantially in the last couple of years in working with the International Atomic Energy Agency and I have confidence that it is very unlikely there would be diversion. If there is a problem they would know. We would know about that and would work jointly to solve any problem.

I would like to say that I second the comments made that it ought to be an objective to get additional countries to join EURATOM because that would increase the confidence we have in the lack of proliferation from them.

Senator GLENN. DOE has said that the U.S. seeks maximum transparency over plutonium uses. You have been criticized repeatedly by GAO for not having a good tracking system. We have four GAO reports assailing your Department for not having a good tracking system. How does the agreement with its secret list of storage facilities, its bans on material tracking, and its lack of U.S. access to data about the locations and disposition of U.S. materials foster transparency?

Dr. LASH. I would agree with the comments that had been made before, that we have a concern about transparency with regard to plutonium regardless of its origin. A U.S. tracking system, even one that the GAO found acceptable, would not accomplish the degree of transparency that I think the question suggests. We have to rely on safeguards and security to a great deal in order to be sure that there is no diversion or theft of material. A tracking system in and of itself will not provide that assurance.

Sure, we would like to know more than we know and we are going to work on that. One of the important things about the Agreement is that it allows us in a collaborative, cooperative way,

to work with our allies to improve our knowledge and understanding on transparency issues and I think progress has been made and will continue to be made.

Senator GLENN. Just one thing further and then we can submit the other questions for the record, Mr. Chairman. I know our time is getting away from us here this morning.

Mr. Wulf, the views and recommendations submitted by ACDA to the President regarding this agreement, Director Holum stated that, "U.S. national security interests are protected through the provisions allowing suspension of the consent rights for reprocessing and other activities."

Let me ask again. Suppose a former Warsaw Pact Nation enters EURATOM, builds a reprocessing plant, begins stockpiling plutonium, and we decide we do not like it. Can we stop U.S.-origin spent fuel from going to that country without stopping all nuclear cooperation with every country in EURATOM?

Mr. WULF. I think the short answer to that question is no, we would have to stop the cooperation under the Agreement itself. But I do want to go back and stress the hypothetical nature of that question. The reason that we were able to accept the high standard that was put in that Agreement, with respect to suspension of the Agreement is because we believe that the EURATOM membership itself has a very high stake in ensuring that its members comply fully.

After all, if you are 75 percent dependent, as France is, on nuclear power for electricity, or 35 percent, as EURATOM as a whole, you have an interest in making sure that everybody who is part of the team does not screw up their energy source. So there is a lot of pressure on any member of EURATOM to make sure that they comply.

Senator GLENN. Thank you, Mr. Chairman. I can submit some more questions for the record.[1]

Chairman STEVENS. Senator Levin, do you have any questions?

OPENING STATEMENT OF SENATOR LEVIN

Senator LEVIN. Just a few questions, thank you, Mr. Chairman.

I think that the first question has been partly answered but I would like to just pursue it again a little further, Mr. McGoldrick, and that is the full-scope IAEA safeguard issue. We are not requiring in this agreement full-scope safeguards. We are saying "or their equivalent," as I understand it. Where under our law are we allowed to enter into an agreement which says "or their equivalent"?

Mr. MCGOLDRICK. Senator Levin, the agreement does require full scope IAEA safeguards.

Senator LEVIN. Does it not say "or their equivalent"?

Mr. MCGOLDRICK. I do not believe it says the equivalent. It says if the present safeguard agreement disappears, then it has to be replaced with an agreement that is equivalent in coverage and effectiveness. So in any case, it would be full-scope safeguards on the non-nuclear weapons state members of the community.

[1] The questions for Mr. McGoldrick with attachments A and B appears on page 211.

Senator LEVIN. Relative to the safeguards issue as to how long they last, the requirement of the law is that the safeguards be there in perpetuity.

Mr. MCGOLDRICK. That is right.

Senator LEVIN. As I understand it, we are requiring NPT-type safeguards basically?

Mr. MCGOLDRICK. That is correct. But there are also——

Senator LEVIN. Now, if somebody withdraws from the NPT, it may be an unlikely event, but if a member state withdrew from the NPT, then what happens to the safeguards?

Mr. MCGOLDRICK. There is a requirement that the safeguards continue in perpetuity. Notwithstanding the right of a country to withdraw from the NPT, there is a requirement in the agreement that IAEA safeguards be continued in perpetuity.

Senator LEVIN. If you will turn to page 16 of the message from the President. It is Article 6, Section 3–B. It says, "The community shall give the United States an assurance that safeguards are being applied by the community which provide for effectiveness in coverage equivalent"—is that not different from what you just said?

Mr. MCGOLDRICK. No. You notice it says—this is assuming that the IAEA safeguards agreement are not being applied, if in the inconceivable event that the IAEA disappears or that the members withdraw safeguards.

Senator LEVIN. The only time this is triggered is if IAEA disappears?

Mr. MCGOLDRICK. Yes. Now, what it says is that the community shall give the United States an assurance that safeguards are being applied by the community which provide for effectiveness in coverage equivalent to that provided by safeguards agreement required by paragraph 1–A, B, and C, which is an IAEA full-scope safeguards requirement. So it has to be the same coverage.

Senator LEVIN. But it is only triggered under the circumstance you gave?

Mr. MCGOLDRICK. That is correct.

Senator LEVIN. And the last question that I have, and I have many questions for the record but I know how late we are so I will just ask you one more question here, on the guarantee of U.S. prior consent on retransfers——

Mr. MCGOLDRICK. Yes?

Senator LEVIN. As I understand it, this prohibits or addresses a retransfer to countries. The agreement talks about retransfers to countries and the Atomic Energy Act talks about retransfers to any destination. Is there any reason why "countries" was used instead of "any destination"?

Mr. MCGOLDRICK. Well, any retransfer outside of EURATOM would have to go to a country and I do not know of any destinations that would not be under some other country's territorial jurisdictions. I think it is equivalent.

Senator LEVIN. The implication——

Mr. MCGOLDRICK. Or am I misunderstanding your question?

Senator LEVIN. No. Is it intended, for instance, to cover the retransfer to any destination, any location, even if it is not a governmentally-approved one, or even if it is not a country's government? Do you know what I am saying? The word "country" could

imply government. The word "destination" implies any place, whether it is a governmentally sanctioned or non-governmentally sanctioned.

Mr. McGOLDRICK. I think we regard them as equivalent. There is no distinction.

Senator LEVIN. You regard any country as being equivalent to any destination within a country?

Mr. McGOLDRICK. Yes, yes.

Senator LEVIN. It is not intended to be a——

Mr. McGOLDRICK. No, it is not.

Senator LEVIN. Thank you.

Chairman STEVENS. Thank you. I apologize. I have another issue to deal with at this same time.

Let me ask you just one last question, gentlemen, and that is this: In the event that there was a resolution adopted by the Congress which would impose conditions upon the approval of this agreement, what would be the effect of that in terms of, one, the delay as far as proceeding with exports, and two, with regard to negotiations with EURATOM people?

Mr. McGOLDRICK. Mr. Chairman, this agreement, indeed no agreement, is perfect, but we think it stands on its merits and——

Chairman STEVENS. That is not my question.

Mr. McGOLDRICK. I know, but we——

Chairman STEVENS. Procedurally, what is going to happen if we say we approve it conditionally?

Mr. McGOLDRICK. That would have to be considered by the President. We would have to look at the conditions.

Chairman STEVENS. Has that ever happened?

Mr. McGOLDRICK. No, not that I know of.

Chairman STEVENS. But clearly, we have that authority? We have that prerogative?

Mr. McGOLDRICK. Of course the Congress has that prerogative.

Chairman STEVENS. We are talking about our own domestic concepts of tracking now, so it will not really impose any burdens on the other members, right?

Mr. McGOLDRICK. Again, Mr. Chairman, this was a very difficult negotiation. It took 16 years, and——

Chairman STEVENS. But I am not talking about that. Again, I want to make sure we understand each other. If we put conditions on what you must do to maintain a tracking system, that will not burden EURATOM, will it?

Mr. McGOLDRICK. I would have to know what the conditions are to be able to answer that question.

Chairman STEVENS. You are going to hear those in a few minutes. But if we are putting conditions on our Government's participation in this agreement, does that in any way cloud this as far as our relationships with the European members of EURATOM?

Mr. WULF. If it requires the European members to provide information that they are not under the agreement providing or would have to provide, then we would have to go back to EURATOM, seek to get their consent to that, additional information, and then bring the agreement back.

Chairman STEVENS. I am looking at the clock ticking, so I just want to make sure we understand what the circumstances might

be. Do you agree that if we just put conditions on this tracking system, we are not going to interfere with the agreement?

Mr. WULF. It is possible to fashion legislation that would not interfere with this agreement, but if, as I understand the thrust of what some of the other witnesses may be saying, is that they want more information from EURATOM than the agreement provides for, we will have to go back to EURATOM and get their agreement to that. That is not something that they will take too kindly, I can assure you, sir.

Chairman STEVENS. And the consequence of that would be to suspend all exports or relationships with them until there is another agreement, right?

Mr. WULF. Until this agreement can enter into force with presumably the amendments that would be dictated by the resolution that you are talking about, that is correct. There would be no exports of nuclear materials or nuclear equipment, although some minor exports could still go.

Chairman STEVENS. We are going to ask you and others for information. I would hope we would have the responses by the close of business Friday, because I think we have to determine fairly early next week if any member wishes to move with regard to this agreement. In fairness, that would leave us only 10 days starting, as I understand it, Monday morning. Unless there is any disagreement, the request we are making to anybody for information should be at this Committee by the close of business Friday.

Senator GLENN. May I ask a question?

Chairman STEVENS. Yes, sir.

Senator GLENN. Is there anybody that is going to be out of town or anything that could not respond to questions and get it back by e-mail or something like that by Friday?

Mr. WULF. It should not be a problem.

Mr. MCGOLDRICK. We will do our very best to get that back to you.

Chairman STEVENS. If you have problems, we will send messengers for it.

Senator GLENN. Thank you.

Chairman STEVENS. Thank you very much.

We will move on to Dr. Schlesinger now. We are pleased, Dr. Schlesinger, former Secretary of Energy, that you would take the time to come and join us this morning at our request. I hope you will not consider me rude, but I must leave at 11:30. Senator Brown will come and take my place then. But we do appreciate your courtesy and would be pleased to have your comments.

TESTIMONY OF HON. JAMES SCHLESINGER, FORMER SECRETARY OF ENERGY

Mr. SCHLESINGER. Thank you, Mr. Chairman.

Mr. Chairman, Members of the Committee, I appreciate this invitation to testify on a seemingly small yet critical element of U.S. diplomacy that has major national security implications.

I have not followed the details of this negotiation closely in recent years, but 2 years ago, I did chair a study on this issue, which

I will turn over to the Committee for the record.[1] It was a consensus report and the signers included two of your Senatorial colleagues, four ex-Secretaries of Defense, Dr. Brezhinski and General Scowcroft, a slew of former ambassadors, the former Deputy Director of IAEA, two SACEURS, one Secretary of State, and the like. All of us were concerned about the possibility of an impasse between EURATOM and the United States and its national security and foreign policy implications for this country.

It would have been a major setback if there were such an impasse to our pursuit of nonproliferation policies because the core of our nonproliferation policies is the working together of Western Europe, the United States, and Japan. A split between Western Europe and the United States would have seriously interfered with our ability to pursue those policies, which, at the time of the writing of this report, included the extension of the nonproliferation treaty.

The effect of an impasse and a termination of trade with the EURATOM nations would have meant a slow separation between ourselves and EURATOM and consequently a growing loss of influence by the United States over EURATOM. And in addition, of course, it would have been a significant commercial setback, but it struck the members of this panel that that was less important than the foreign policy implications.

Mr. Chairman, I will comment just briefly on the history of these agreements. The United States encouraged the formation of EURATOM in the 1950's. The United States regarded EURATOM as a model to be followed worldwide as a way of establishing responsible use and control in the peaceful uses of the atom and at the same time avoid the nationalism that had marked European diplomacy for so many years. It was a way of imposing restraint on individual nations, most prominently Germany, through the establishment of EURATOM.

The first EURATOM agreement was signed in 1958. As you all know, in 1978, the Nuclear Nonproliferation Act was passed, which added "consent rights" which were to be imposed on EURATOM at the time of renegotiation. There was considerable European resentment of what they regarded as the unilateral extension of the extraterritorial reach of American law. There was also initiation that as the European nations improved in nuclear technology to the point that they were at least equivalent to the United States, at that very moment the United States was seeking to tighten control over them.

As a consequence, the negotiations, as Ambassador McGoldrick has indicated, took 15 years before we finally reached agreement with the Europeans. I shall come back to that in a moment. Before they would consent to "consent rights" we went beyond the deadline. The agreement has now lapsed. We went right up to the deadline—and beyond it.

The Europeans demanded a waiver of those consent rights and we did not agree to that. We indicated to the Europeans that the

[1] The study entitled "Negotiating a U.S.-EURATOM Successor Agreement—Finding Common Ground in Nuclear Cooperation, A Consensus Report of the CSIS U.S.-EURATOM Senior Policy Panel" appears on page 246.

new agreement had to conform on this point to American law—a point that I shall return to in a few minutes.

I should add that over this period since the 1950's, there has been a steadily declining leverage of the United States over other nations—and particularly over the industrial nations. In the 1950's, the United States was dominant in nuclear technology. By the time of the 1970's, the United States dominance had pretty much dwindled to a rough parity with Europe.

Many of the European countries were moving rapidly towards greater exploitation of nuclear power than the United States. France now has 70 percent of its power being generated by nuclear reactors, Belgium about 60 percent. The U.K. and Germany both exceed the United States. The European states did not wish to have those power sources placed at risk because of what they perceived the risk of capricious behavior by the United States.

Our own actions in this period steadily undermined our position of authority in these matters. Perhaps most prominently, alternative sources of nuclear fuel came into existence—and that event was augmented by foolish policies with regard to pricing and supply by the United States. As a consequence, there are now many sources of nuclear fuel around the world, most prominently in Europe, and now augmented by substantial potential supplies from the former Soviet Union. In the 15 years that we have been negotiating the extension, the position of the United States with regard to its lead in nuclear technology has further eroded.

Mr. Chairman, the proposed agreement fully meets the requirements of U.S. law and in particular it meets the requirements of the Nuclear Nonproliferation Act. The agreement calls for long-term programmatic approval, something that our panel recommended 2 years ago. The Europeans, as I indicated, were reluctant to accept long-term programmatic approval. They demanded a waiver. We did not yield. I believe that the proposed arrangement is the only acceptable, and, incidentally, sensible, way to achieve mutual agreement.

If in any way U.S. national security is jeopardized, we continue to have a right of withdrawal from the agreement. There is no reason to expect that that will happen. But if that were to occur and the agreement lapsed, the consequences are something that we cannot now predict. There is no way to know what would happen if, indeed, the agreement were to be terminated.

On the question of long-term programmatic approval, we already have ample precedent. We have agreements for cooperation with Finland, Norway, Sweden, and most prominently Japan. EURATOM has indicated, and I find this position quite understandable, that they would clearly not accept less than was given in other agreements.

Some critics, Mr. Chairman, suggest that we undergo serious risk of a diversion of plutonium as a result of these long-term agreements. There is plenty of room between the United States and Europe for debate about policy objectives. U.S. policy may well be right with regard to plutonium. For 20 years, we have sought to discourage the reprocessing of plutonium. The unfortunate thing, perhaps, is that other industrial nations disagree with us, and we

lack the power to impose our judgments with regard to plutonium production on them.

It is simply an illusion, Mr. Chairman, to believe that we do have that power. They have the power to go their own way and they will do so. The consequence of their going their own way would be a further loss of influence on our part.

I might add, Mr. Chairman, as a cautionary note that every time the United States has sought to impose our views on the Europeans, we have not only failed but we have lost influence. Two examples of that that come to mind, the early 1960's under the Kennedy administration, it was the policy of the U.S. Government to bring Charles de Gaulle to heel by denying him nuclear technology and bring to its knees the French quest for nuclear weapons. I can only say that the resistance of the United States simply added piquancy to General de Gaulle's desire to pluck a few feathers from the eagle's tail.

In the 1970's, the international nuclear fuel cycle evaluation started out as a way of bringing Europe to heel with regard to plutonium issues. That was an exercise that ultimately resulted, I think, in valid policy conclusions but far short of what the United States originally intended.

Mr. Chairman, let me conclude about our attempts to impose greater U.S. controls over EURATOM.

First, it is the wrong target. The real focus of American concern with regard to nonproliferation must be the rogue states—North Korea, Iran, Iraq. EURATOM is our own creation. It was designed to avoid nationalism and to avoid national rivalries in Europe. It is designed as a model for the peaceful use and control of nuclear power. It has had exemplary behavior for almost 40 years. The governments of EURATOM are our closest allies and they are indispensable partners in the nonproliferation goals of the international community.

The European view, Mr. Chairman, is that now, after 38 years of the EURATOM agreement, we for some reason seek to impose stricter controls on those who, in their own judgment, have surpassed the United States with regard to nuclear technology. They also continue to look warily at the possible extraterritorial reach of American law.

Some have advocated a case-by-case approach rather than the approach that is used in the agreement of long-term programmatic approval. That approach suggests that unless the European countries have an American nanny continually peering over their shoulders, they are untrustworthy—a view that can scarcely be accepted by our partners.

Second point, the means available to us to "discipline the Europeans" with regard to a plutonium economy are both inadequate and potentially destructive. In the 40 years since General Eisenhower's speech, we have moved on and our leverage has diminished. We now have only a modest degree of leverage. It is less strategic than it is frictional, because it can be overridden by those countries that we supply. We would soon exhaust that modest leverage if we were to attempt to exercise it against industrially capable powers.

The Europeans believe that they are more than our equals in terms of nuclear technology. The Japanese are now approaching our level.

Any serious attempt, and I underscore serious attempt, to modify the agreement will mean the treaty will lapse. We will lose power that we presently have over the activities of EURATOM. Others, such as Japan, will accelerate their efforts to improve their own capabilities for separation and accelerate their efforts in reprocessing. The principal barrier worldwide to nuclear proliferation is the cohesion of the West or the cohesion of the industrial world, what we refer to in a self-glorifying manner as the international community.

Mr. Chairman, let me close by saying that in Greek mythology, it was believed that Zeus hurled thunderbolts. We in the United States seem to believe that we also are in a position to hurl thunderbolts—and thereby control the actions of other nations. A century and a half ago, Thomas Babbington Macaulay in the debate over the Great Reform Act said, "We must include those that it is necessary to include so that we are able to exclude those whom we must exclude." The European nations are ones that should understand it is necessary to include—in order that rogue nations be excluded.

Mr. Chairman, it is an illusion, a self-defeating illusion, to believe that the United States can by fiat control all actions of all nations. Thank you.

Chairman STEVENS. Thank you very much, Dr. Schlesinger. I appreciate again your taking the time to be with us, and I am sure my colleague has some questions for you. I must be excused. Thank you.

Senator GLENN. I do not have very many questions. Our time is getting late and you have been very patient waiting all this time while we had lengthy questions for other witnesses.

I guess one of my main concerns about this, you mentioned that U.S. policy has tried to discourage plutonium production, and that has been our policy for a long time. I have agreed with that.

Mr. SCHLESINGER. Twenty years, roughly.

Senator GLENN. Twenty, 25, whatever it is. I guess it bothered me very much, and I opposed the Japanese agreement because 30 years, how you can predict something 30 years into the future, I do not know. Even on NPT during its 25-year tenure, we had a 5-year review process where we went into it and evaluated how things were going. Now we have permanent NPT, but it was after that 25 years' experience of 5-year increments of getting together and discussing each 5 years how this thing was going.

I guess it bothers me to have a 30-year agreement and it also bothers me to have this agreement, what I think will be for the first time that we agree to completely uncap stockpiling of plutonium outside the Japanese agreement, and we agree with that and that is going to be the policy. We do not come out against that.

Does that bother you? It bothers me a little bit. I am not quite sure I know what to do about it, but it bothers me.

Mr. SCHLESINGER. I think plutonium is worrisome. It is the gift of Pluto. It comes from the underworld. That is why it was named plutonium.

Senator GLENN. And we may have some international gangsters willing to use it, too, in the underworld.

Mr. SCHLESINGER. That is another underworld. Yes, it is worrisome because we ought to have a mechanism for rigorous control of plutonium. We have excesses of plutonium around the world largely as a result of the demilitarization of our nuclear weapons. There is no easy way of disposing of it. The easiest way, although it has some risks, is to burn it up in reactors.

My judgment is, once again, that the industrial nations must all stick together. The Europeans are and have been our most reliable partners. They have had an exemplary record with regard to maintaining controls within Europe. As your earlier question indicated, Senator Glenn, the record is not exemplary with regard to supplying equipment to outside countries. But that is contrary, I believe, to the desires of the governments. I think that the Dutch and German government were shocked when they discovered how much equipment had moved from Europe to Iraq.

They have attempted, perhaps ineffectively, to prevent the spread of these technologies outside of Europe. It is for that reason, of course, that nations like Iran and Pakistan are turning to, let us say, the People's Republic of China, because they find it so hard to get sufficient help out of Europe.

Senator GLENN. Does it give you a little pause when we think that other nations may be coming into this without our having a right to exclude them—Poland, Slovakia, the Czech Republic, Hungary, Romania, Bulgaria? Maybe that is good, but——

Mr. SCHLESINGER. It has its advantages and its risks, Senator. Does it give me pause? Yes. Almost everything that goes on gives me pause, because there are all sorts of risks. We must attempt to balance them.

Just as the best watchdog over any hypothetical German move towards diverting material into weapons is French vigilance, so I think that any move by Poland to divert nuclear materials into weapons would be very carefully watched, particularly by Germany.

I think that EURATOM is an organization in which all of the members have a common interest in watching each other. For that reason I think that although there are some concerns about who may come in—less concern if the Europeans follow their established criteria, that it is not something that should be a particular worry to us, but something we should, on balance, welcome.

Senator GLENN. The CSIS report that you mentioned a little while ago cited Europe's "exemplary record on nonproliferation." You testified before the Senate Armed Services Committee on the eve of Desert Storm—this is back in 1990, several years ago—that many of our European allies, in your words, "assisted" Iraq in its quest for the bomb.

To your knowledge, have these countries assisted any other nations to acquire the bomb or the missiles to deliver them?

Mr. SCHLESINGER. If I said that, I should not have said that these nations assisted it. Companies within these nations, individuals within these nations may have been seduced into providing components. I do not think that it is the policy of any European government to supply nuclear-related materials to aspiring states.

I think that in that regard, their incentive to avoid Saudi's help is at least as great as ours.

Senator GLENN. Henry Kissinger has indicated on more than one occasion that in his view, the Japanese nuclear program is designed to give them a nuclear weapons option that can be quickly implemented, and I would read a quote.

He said, "If North Korea gets nuclear weapons, Japan is certain to get nuclear weapons. It probably will get nuclear weapons anyway. Its domestic nuclear program is geared to this, but this would certainly accelerate it by many years. Then it would be hard to imagine that Taiwan, Vietnam, and other Asian countries that have a greater technical capability than North Korea does would not follow suit. We would then be living in a nuclear age where national rivalries are much greater than they are in Europe." [Source: Interview on Charlie Rose Show, WNET, 11 July 1994.]

I do not know whether you agree with that statement or not, but under these circumstances and with the knowledge that Japan is currently stockpiling plutonium from U.S.-origin spent fuel, that is a 30-year agreement. Do you have any comment on that or what may be going on out there and could be happening in Europe later?

Mr. SCHLESINGER. The first part is it does point, Senator Glenn, to the necessity of heading off North Korea's aspirations. Indeed, that first statement was correct. If North Korea does acquire nuclear weapons, it will upset all of the calculations that are presently in the minds of their neighbors. Japan will probably feel obliged to go along with development of nuclear weapons as well as other nations such as South Korea. We only headed off South Korea in the middle-1970's through very major pressure by the United States. We would not be able to do so under those changed circumstances.

With regard to whether or not the Japanese are going to go ahead some day, that is conjectural, but I do believe that if they were to go ahead with U.S.-origin materials, we would terminate that 30-year agreement, whether it comes in 10 years or 7 years.

It has been better, far better over this long period since the close of World War II for the United States to have some degree of influence and some degree of control than it would be not to have the degree of influence and degree of control. Consequently, it has been my judgment that we have succeeded far better than we ever anticipated in the immediate post-war period in controlling the spread of nuclear weapons.

Senator GLENN. Just one other comment. I ask for your comment on this, too. This gets into the plutonium threat. The materials submitted with this agreement indicate that Japan and Europe plan to separate some 500 tons of plutonium in the next two decades. About half of that will be of U.S. origin, as I understand it. The U.S. weapons stockpile is now about 100 tons.

We have friendly relations with Japan and Europe but there are long-term security implications of this. I do not think we can see in a 30-year agreement. Most anti-terrorism experts who focus on the so-called "loose nukes" threat seem to be seeing those threats emanating only from the Soviet Union. Do you think the threat is broader than that, or where are we going with this? Five hundred tons of plutonium?

Mr. SCHLESINGER. It is a worrisome development, Senator. There is no question about that. A problem that is embodied in your question: If they "only" have 250 tons of non-U.S.-origin material, that is two-and-a-half times the size of the plutonium stockpile that we have used in nuclear weapons. Even if we were to prevent their using any of these U.S.-origin material, there is still an immense problem there.

Senator GLENN. And once you get beyond 500 tons or 100 tons, I guess it gets to be academic, whether it is several thousand or whether it is 100 at that point.

Mr. SCHLESINGER. It becomes academic if there is a desire on the part of governments to upset the apple cart. Under those circumstances, we would have to think of serious measures.

Senator GLENN. I agree that this——

Mr. SCHLESINGER. As we have had to think about such measures in the case of North Korea.

Senator GLENN. Thank you, Mr. Chairman.

OPENING STATEMENT OF SENATOR BROWN

Senator BROWN [presiding]. Thank you, Dr. Schlesinger. We appreciate your testimony.

I just wanted to pose one question for you that maybe does not have an answer, or at least I do not think an easy one. You already commented that we had succeeded remarkably well in the post-World War II era in containing this. I think that is a fair judgment and a record we ought to be proud of, one I would agree with.

It strikes me we are also in an age where the physics involved with these weapons is taught by not one university but perhaps hundreds now. There are even popular movies that come out demonstrating people making nuclear weapons. The technology is widely spread. The potential industrial complex necessary to accomplish it is not as widely spread but is expanding.

Are we really dealing with an interim strategy and do we lack a long-term strategy, and if so, what should our long-term strategy be? I mean, my impression is it would be unrealistic to think that what we are doing right now is a long-term cap on nuclear weapons.

Mr. SCHLESINGER. Yes. We are, Mr. Chairman, just attempting to cope. I think we are attempting to cope on a decade-by-decade basis, but I do not think that there is a long-term strategy. We attempted one in the immediate post-war period with the Lillinthal plan that was presented to the United Nations. It was not accepted by the Soviet Union.

Unless we achieve an overall system of control, we will not have a long-term strategy. We will have to do the negotiations among sovereign nations. That is unsatisfactory. It may be the best that we have under these circumstances.

Your initial comment—it scares the hell out of me. We have seen the breakdown of our system of classified information, particularly in the last decade, so that concepts that were whispered softly in a hushed room are now in the daily newspapers. That spreads the knowledge.

And finally, all of our universities are seeking to attract foreign students. There are many, many Libyan students in the United

States. They are not here studying home economics. I suspect that Colonel Qaddafi has them here for the purpose of acquiring information about these technologies.

In a system in which we do not have total international control, imposed perhaps by the Western world or by the United Nations or whatever, we do not have a satisfactory long-run solution. We have put this issue off better than we thought for 30 years and I hope that we can put it off for another 50 years far better than we presently think.

Senator GLENN. Just one further as an aside here, and I know time is completely away from us today here, but concerned as I am about nuclear matters, I am even more concerned that I think we have a far greater danger from chemical and biological in the near-term future.

Judge Webster sat right where you are when he was head of the CIA back a few years ago and testified that the size of this room could accommodate a very credible chemical weapons factory and they cannot possibly keep track of those all over the world, and made with materials that are common to many other techniques that make it very difficult to keep up with that. It does not require the huge industrial complex that is still needed for nuclear weapons, and that is one fortunate thing, that we have not learned to miniaturize nuclear weapons production down to something the size of this room.

I think our danger is from terrorism, international terrorism and international purposes of whatever, that can be put into an air conditioning system for the World Trade Center or something else, biological, chemical, or whatever can be strapped around a person's waist and go through airport metal detectors, things like that. I think our actual danger comes more from those than from nuclear, but that does not mean we do not really try and control this. That is just an aside. That is not a question.

Mr. SCHLESINGER. Senator, if I may comment, it is almost hopeless to think about controlling chemical weapons. You can produce chemical weapons in any agricultural fertilizer plant.

Senator GLENN. And the formulas are known and any good graduate chemist knows how to set up the plant.

Mr. SCHLESINGER. That is why I have believed that we must do what we can do, and what we can do, I think, is to continue to limit the spread of nuclear weapons. That deserves our focus. In my judgment, we devote too much energy to what is a hopeless task of preventing the spread of chemical weapons technology.

Senator BROWN. Thank you for your testimony.

Mr. SCHLESINGER. Thank you, Mr. Chairman.

Senator BROWN. We will call our fourth panel, the Vice President of the Nuclear Energy Institute, Marvin Fertel, and Paul Leventhal is President of the Nuclear Control Institute.

TESTIMONY OF MARVIN S. FERTEL,[1] VICE PRESIDENT, NUCLEAR ENERGY INSTITUTE

Mr. FERTEL. Thank you, Mr. Chairman, Senator Glenn. On behalf of the Nuclear Energy Institute, I am pleased to appear before you today to present the U.S. commercial industry's views on the U.S./EURATOM Agreement for Peaceful Nuclear Cooperation.

I had short remarks. In recognition of the time, I have shortened them and would certainly answer questions at the end and certainly any questions you submit to me.

Senator BROWN. Your full statements will be included in the record.

Mr. FERTEL. NEI represents approximately 275 companies and organizations worldwide in the nuclear energy industry. Our member companies believe that a strong nonproliferation regime is vital to U.S. national security and global nuclear commerce. The industry's philosophy is not one to balance these two considerations. Rather, NEI believes a strong multilateral nonproliferation regime is the underlying foundation that is essential for peaceful nuclear commerce and the economic benefits such commerce provides us here in the U.S.

We view the new U.S./EURATOM agreement as a means to strengthen both the economic benefits and nonproliferation regime. Therefore, the commercial nuclear industry believes Congress should support this agreement for cooperation, unaltered and unconditioned.

The U.S./EURATOM agreement and other bilateral and multilateral agreements have allowed an economically successful nuclear trading relationship to flourish, consistent with effective safeguards against proliferation. Without a new agreement, as you have heard, U.S. companies could not export to EURATOM member nations major nuclear power plant components or uranium produced and/or processed in the U.S.

Furthermore, U.S. equipment, materials, and processing services would be much less desirable to third countries, who would be seriously restricted in their use, transport, and processing.

In the United States, the impact of non-renewal of the agreement on our 110 nuclear power plants which provide one-fifth of the electricity used in this country would be a destabilization of the international fuel supply market and we believe the likelihood of ensuing increases in the cost and decreases in the reliability of fuel supplies.

Commercial nuclear business in EURATOM nations represents a considerable amount of the approximately $4.4 billion in U.S. nuclear-related revenues in 1994, one-third of which is export-related business. U.S. companies have billions of dollars in facilities in the U.S. that depend on European and international markets as a major source of business.

Failure to renew the U.S./EURATOM agreement would result in a significant loss in U.S. trade, and cause significant direct dollar and employment losses in the United States. For example, in 1994, there were about 15,000 jobs directly related to nuclear commerce in just Pennsylvania, California, Ohio, and Kentucky.

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[1] The prepared statement of Mr. Fertel appears on page 278.

No group is more dependent upon and dedicated to an international commitment to plant safety, strong safeguards, and nonproliferation than the nuclear industry. Our survival depends upon it.

With an agreement, the United States has a definitive window into Europe and specific influence on the European nuclear programs. Without the agreement, U.S. influence will be radically diminished. Of equal importance, we believe, is it would send at best confusing signals to the rest of the world on the relationship and goals of the world's leading nuclear powers, I think part of the message Dr. Schlesinger was delivering.

As all the members of the Government panel indicated, the new agreement is in full compliance with U.S. law. To the best of our knowledge, it is in full compliance with U.S. law.

Mr. Chairman, we believe the agreement advances the economic, political, and nonproliferation interests of the United States and provides a comprehensive long-term framework for nuclear cooperation between the U.S. and our allies in the European Union. From the perspective of our broad-based membership, we strongly recommend that Congress support the new U.S./EURATOM agreement, unmodified and unconditioned. By so doing, we believe it will allow the United States to continue its leadership role in the world nuclear community. It will allow our domestic industry to benefit from a stable market for nuclear commerce and it will further our goals to strengthen the international commitment to nuclear nonproliferation.

Thank you, Mr. Chairman and Senator Glenn. I would be glad to answer any questions.

Senator BROWN. Thank you.

Mr. Leventhal?

TESTIMONY OF PAUL LEVENTHAL,[1] PRESIDENT, NUCLEAR CONTROL INSTITUTE

Mr. LEVENTHAL. Thank you, Mr. Chairman. I appreciate this opportunity to testify on the proposed nuclear cooperation agreement between the United States and EURATOM. I am the only witness in opposition to the agreement and I will try to summarize the basic arguments that we have as to why the agreement should not be allowed to come into force in its present form.

My name is Paul Leventhal. I am President of the Nuclear Control Institute. We are a nonprofit research center on nuclear proliferation problems. I would also like to make clear that we are not an anti-nuclear organization. If I had to characterize us in terms of "anti," we are anti-plutonium, we are anti-highly enriched uranium, we are anti-use of atom bomb materials as fuels in civilian nuclear power programs, and I ask that you consider my testimony in that context.

I am accompanied by Eldon Greenberg, our counsel, who is a partner in the law firm of Garvey, Schubert, and Barer. Daniel Horner, our Deputy Director, assisted in the preparation of this testimony.

[1] The prepared statement of Mr. Leventhal with attachments appears on page 291.

This Committee has had a long and distinguished involvement in nuclear proliferation issues and is to be commended for holding a hearing on this agreement before it would have come into force automatically.

I would like to express my appreciation to Chairman Stevens and Senator Glenn for their initiative in convening this hearing and to Senator Glenn in particular for his two decades of leadership in seeking to prevent the spread of nuclear weapons.

We believe there are two basic and closely related questions that Congress has to ask as it considers the U.S./EURATOM agreement. The first is whether the agreement meets all the requirements of U.S. law, in particular the Nuclear Nonproliferation Act. The second question is whether the agreement in its present form serves U.S. national security interests. In our view, the answer to both questions is clearly no, and we propose that the agreement in its present form be rejected, or, at a minimum, be approved with conditions that must be met before the agreement can come into force.

At the conclusion of my testimony, I present a list of conditions that has been proposed by six organizations in a letter to Congressional leaders released at a press conference last Friday.[1] The signers of that letter were Stanley Weiss, President of the Business Executives for National Security; Frank Gaffney, the head of the Center for Security Policy; Tom Clements of Greenpeace International; Ken Timmerman of the Middle East Data Project; Christopher Payne of the Natural Resources Defense Council; and myself for the Nuclear Control Institute.

This coalition represents a full range of viewpoints on national security and nonproliferation issues and I think it is fair to say that not a single member of the Senate does not fall within the political spectrum represented by these six organizations. So I ask that their joint material and related materials expressing deep concerns about the agreement and proposing the conditions that I mentioned, which are designed to mitigate damage to vital security interests, be inserted in the hearing record and be given every consideration by this Committee.

Senator BROWN. Without objection, it will be included in the record.

Mr. LEVENTHAL. I would also like to submit a detailed analysis of the agreement prepared by our counsel, Mr. Greenberg, for NCI which provides the legal basis for the coalition's position and for the specific proposals for remedial action that are contained therein.[2]

I would also like to submit a document entitled "EURATOM's Nuclear Proliferation Record" for the hearing record.[3]

I wish to mention that a senior policy analyst at the Heritage Foundation, while not signing the letter, has publicly criticized the agreement and has embraced the remedial approach outlined in the group's letter.

There have been a number of statements made by the Government witnesses and by Mr. Schlesinger, and I will try to deal with

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[1] The letters referred to appears on page 301.
[2] The NCI Report from Mr. Greenberg appears on page 313.
[3] The document referred to appears on page 329.

those as I go through our basic arguments against the agreement in its present form.

The first thing to emphasize is that the organizations that are opposed to this agreement are not opposed to cooperation with EURATOM, but rather want to see cooperation that is subject to the controls required by U.S. law. I would submit that this agreement does not represent an embodiment of those controls. In fact, in my view, it represents a recipe for loss of control over the 30-year minimum term of the agreement.

Surely the agreement as it is presently constituted represents a breakdown of Congressional oversight and public review of U.S. transactions with other nations, and in this case with EURATOM in particular. It brings us back full circle, Senator Glenn, to the time when the NNPA was first proposed and enacted in response to the secrecy that surrounded Executive Branch handling of arrangements with other nations. In my view, if this agreement comes into force in its present form, effective Congressional oversight and public review will be lost.

In my testimony, I make much of the fact that the core principle of the Nuclear Nonproliferation Act is the establishment of consent rights, that is, the right of the U.S. to consent to particular activities by other nations involving U.S.-origin, weapons-usable nuclear materials as well as technology and equipment that can be applied directly to the manufacture of nuclear weapons in one form or another.

Frankly, the executive branch was providing misleading testimony when it kept referring to consent rights contained in this agreement. There are no specified consent rights in this agreement. What there is is a broad authorization of authority by the United States to the European Union in the form of EURATOM, which the administration claims embodies all the consent rights and gives the U.S. the same influence that it would otherwise have if they had gone by the letter of the law.

No other nuclear cooperation agreement submitted to Congress looks like this nuclear cooperation agreement. Even in the Japan agreement, which did involve a broad delegation of programmatic consent for future activities, nonetheless, the underlying agreement itself tracked the NNPA sub-section by sub-section, of section 123, and each of the guarantees that the U.S. is required to insist upon in agreements for cooperation under the NNPA is provided for in the underlying agreement. There then ensues an implementing arrangement which basically gives these consent rights away for 30 years, but nonetheless, the specific right of consent applied to individual nuclear activities was established in the Japan agreement.

Now, is this just a narrow legalistic consideration or is it important? We submit that it is vitally important because the consent rights provide the basis for individual subsequent arrangements, made pursuant to the agreement, in which the U.S. and the Congress are, by law, to be directly involved, as well as, key U.S. determinations of timely warning and no significant increase in the risk of proliferation. These key determinations are effectively discarded by the elimination of specific, individual consent rights.

But perhaps most important in terms of the 30-year-plus duration of this agreement is that the suspension rights of the United

States are also keyed to the individual consent rights, and if there are no individual consent rights over particular activities, there are no suspension rights over these activities. Previous witnesses were asked by Senator Glenn, if a problem did arise within a particular EURATOM country, is the United States in a position to suspend consent for activities involving U.S.-origin materials, equipment, and technology in that country?

Their answer was no. The only thing the United States could do in that circumstance is to terminate, to suspend, cooperation with all of EURATOM, which aside from being politically impossible, raises a number of problems also with regard to claims of breach of agreement.

So we see this agreement being critically and potentially tragically flawed because we must not lose sight of the fact that what this agreement seeks to control is the use of materials that can be applied to nuclear weapons.

Why should we not give the European allies the benefit of the doubt, as Mr. Schlesinger suggested? What are the problems that we should be concerned about here?

The first problem is one that has already been discussed, and that is that the EURATOM of tomorrow may look nothing like the EURATOM of today. There are some nine former East Bloc countries lined up that have entered into so-called "Europe Agreements" with the European Union, which puts them on a track of formal consideration for admission into EURATOM. Questionable quality of controls, level of political stability, and incidences of nuclear smuggling are far more numerous and more worrisome in these countries than in the existing membership of EURATOM.

But we must also remember, by treating EURATOM as a single entity, we also run the risk of, even among the 15 present members of EURATOM, if there were a sudden loss of security and control in such a country, we would be in the same bind that we would be with incoming members of EURATOM. We do not have the ability to object specifically to activities going on in a particular country, even within the existing EURATOM.

There was also a discussion of whether or not the U.S. has clear control over transfers outside of EURATOM by EURATOM countries. What needs to be brought out in this regard is that it is not to be the same set of case-by-case controls that applied under the former agreement. Instead, there is a list that the U.S. submits, but there is no process for specific approval of individual retransfers outside of EURATOM that the U.S. Government now has in its present agreement with EURATOM.

So while the U.S. can provide a list of countries outside of EURATOM to which EURATOM can supply, and if not on that list presumably cannot supply, nonetheless, these transactions will not be going on with any kind of Congressional oversight, for sure, and everything is negotiable in international affairs, as you know. So the U.S. may not be able to apply the same degree of control if there is a disagreement with EURATOM over a particular transfer outside of EURATOM.

What we have is an agreement for cooperation at a time where we have strong disagreements with EURATOM, and I would like to just itemize a few.

Senator BROWN. Let me ask you, if you would, we are well beyond the time allotted for the hearing and well beyond the 5-minute guideline. We will try and work with you. If it is possible for you to summarize quickly, it would help us.

Mr. LEVENTHAL. I will summarize. At present, the European Community is seeking to negotiate an arrangement with Russia to import highly enriched uranium for use in research reactors at the very time when the U.S. is near success in a nearly 20-year effort to lead the international community into eliminating commerce in highly enriched uranium because research reactors can be run without it. So the Europeans are insisting on maintaining commerce in HEU even though the U.S. has been strongly opposed to it. This will stimulate commerce in an atom bomb material which is even easier to make into weapons than plutonium.

The longstanding dispute with EURATOM on the subject of plutonium has been discussed. I will just mention it as a longstanding and irresolvable dispute, and I must point out to this Committee that fully three-quarters of the plutonium now being separated from spent fuel in EURATOM is U.S.-origin material—three-quarters. It will eventually come down to one-half, Senator Glenn, but the material now being reprocessed amounts to three-quarters U.S.-origin. Eighty-six percent of all the reprocessing going on in the world today is taking place in reprocessing plants located in Britain and France.

I think it should also be mentioned that Mr. Schlesinger, in addition to his distinguished career of Government service, is also on the board of directors of British Nuclear Fuels Limited,[1] which has had a particular interest in the outcome of the negotiation of this agreement. While he does express some of the concerns that I share on the subject of plutonium, he failed to mention that he is on the board of one of the two principal reprocessing companies in the world.

I will conclude my testimony as follows. The conditions that we propose go to the question of establishing U.S. consent rights over particular activities in the European community, and we think it important that the agreement be approved with such conditions, which means that the agreement could not come into force until the President was in a position to certify that he had assurances from the European partners that they would be agreeable to this.

This agreement has no provision on making the agreement subject to the laws and regulations of the United States. This is the only agreement ever submitted to Congress that lacks such a provision. What it means, unfortunately, is that if the U.S. Congress were to pass a law in the future or a regulation should be promulgated in the future imposing stricter controls than provided in this agreement, the U.S. could be held to be in breach.

A further condition we suggest is that the agreement not come into force until EURATOM has made a binding commitment to the United states that it will not proceed with the Russian highly enriched uranium deal. Those are among the key conditions that we are proposing.

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[1] The letter from BNFL appears on page 277.

Mr. Chairman, you are hearing from the administration and the nuclear industry that the proposed agreement cannot be altered one iota, that the negotiations were so arduous and the result so delicate that even the slightest change at this point would cause a cataclysm in U.S.-European relations. They are asking you to rubber stamp a bad agreement and to allow it to come into force in the interest of avoiding political frictions with close allies.

But, I submit, to follow such a course is to ratchet down vital U.S. security interests in the interest of political expediency. There will soon be more plutonium in civilian nuclear programs, three-quarters of it derived from U.S.-supplied fuel, than now exists in all the military programs in the world.

Acting in a manner of political expediency is not how the NNPA is supposed to work and it is not how Congress is supposed to fulfill its statutory responsibility. The statute was to provide Congress with an enhanced role in overseeing U.S. nuclear commerce because of the manifest failures of the executive branch to put security ahead of politics in this arena.

I urge you and your colleagues to fulfill your statutory responsibility by conditioning approval of the proposed U.S./EURATOM agreement upon repair of its principal defects. Failure to do so could set the stage, on your watch, for future acts of nuclear proliferation and nuclear terrorism that could bring great grief and tragedy to the Nation and to the world with U.S.-origin nuclear materials covered by this agreement but not subject to the strict controls required by U.S. law. Thank you for your indulgence.

Senator BROWN. I want to thank both of you for your thoughtful comments. I have a number of questions, and in the interest of time I will submit them to both of you and ask if you are willing to respond, we would appreciate it and we will include your responses in the record.

Senator Glenn?

Senator GLENN. I will have some questions also, but just a couple here, and I will be very brief on these.

Mr. Fertel, you make a point that we must be a reliable supplier to have influence. Do you have any information to present with respect to the proportion of nuclear export licenses that the U.S. Government has denied to European destinations? Is that a problem?

Mr. FERTEL. I have not looked at that. NRC would certainly know and State may know.

Senator GLENN. It is my impression that I think we have been a pretty reliable supplier.

Mr. FERTEL. Oh, I think we have. I think that one of the problems we would have, Senator, and let me just back up, Paul pointed out that three-quarters of the material over there right now is ours, three-quarters of the plutonium. Without this agreement, we have no controls over that.

Senator GLENN. Have you encountered protectionist barriers in Europe in the nuclear industry?

Mr. FERTEL. I am not sure I have encountered protectionist barriers, no.

Senator GLENN. Mr. Leventhal, you are the author of an exhaustive book on nuclear terrorism. I think most of our concerns about nuclear terrorism, though, center on material out of the former So-

viet Union. Do you have any indications that European sources have gotten into that trade or potentially get into that trade or are increasing? I know there is increasing concern, that as the stockpile increases, they are of concern, but do you know of any instances where European sources have been used or been contacted by nuclear terrorists?

Mr. LEVENTHAL. Let me answer the question more generally. The task force that we convened some 10 years ago made the point that as the amount of weapons-usable nuclear materials increase in world commerce, so does the risk that some of that material will be diverted or stolen and could end up in the hands of terrorists. So we have a quantitative measure of risk here. You also have the demonstration effect of the European programs that insist upon using plutonium and highly enriched uranium. Third world countries are watching closely.

The special relationship of Japan with Europe for reprocessing of spent fuel and return of plutonium to Japan is causing concern in the region and is stimulating some of Japan's neighbors to maintain or to seek to achieve plutonium programs of their own. So in broad quantitative terms, I would answer that question by saying that the risks increase as the quantities increase.

How vulnerable the materials are in these programs is open to some speculation, because frankly, the U.S. Government and the IAEA do not have a really good understanding of how EURATOM safeguards work. There was much discussion before about how there would be the equivalent of IAEA safeguards where IAEA safeguards could not be applied.

Senator GLENN. We had testimony on that earlier, and we will——

Mr. LEVENTHAL. But the specific answer to your question is I am not aware at this point of any actual theft of materials from European programs but I think the Japanese case is a very interesting one, where the Aum-Shinrikyo cult was found to have infiltrated Japanese industry to the highest levels, including the chemical industry. There is some concern as to whether the plutonium fuel cycle programs at Tokai were totally free of such infiltration or influence, and frankly, the Japanese fuel cycle company, PNC, did an elaborate job of covering up the severity of a breeder reactor accident. The question that comes to my mind is what would they do if faced with an actual loss of plutonium.

Our prescription is to avoid the use of atom bomb materials in civilian nuclear commerce and to run civilian nuclear programs without these materials. That seems to be the long-term solution that should be obvious but one that has been proven impossible to achieve, primarily because of the fierce opposition of the Europeans and the Japanese, our closest allies and trading partners, to exercising such restraint.

Senator GLENN. Thank you. I will submit further questions.[1]

Senator BROWN. Thank you.

Mr. Fertel, let me just end it with this. Mr. Leventhal and others have suggested that we condition the approval of this agreement on a number of proposals, but I think a principal one would be a case-

[1] Additional questions submitted by Senator Glenn appear on pages 382-443.

by-case approval by the United States Congress itself for new facilities in the EURATOM States. If we did do that, if we put that condition on the agreement, how do you anticipate the Europeans would respond?

Mr. FERTEL. My anticipation from not being obviously directly involved in negotiations over the last 2 or 3 years but being on the outside looking in occasionally is the Europeans would find it totally unacceptable. They would not accept the agreement. The result would be fundamentally a breakdown in our ability to sell to Europe.

I think, as someone earlier mentioned, I think it would have a dramatic impact on our ability to privatize the U.S. Enrichment Corporation, because I think that they would have a terrible time showing that they can maintain their market in Japan. They would certainly lose it in Europe. And I think that it would actually, from a nonproliferation standpoint, do tremendous damage to our ability to improve nonproliferation worldwide.

Senator BROWN. I appreciate the comments from all of you. As I say, we will have additional questions for you if you can help the Committee in that regard. Thank you.[1]

The committee is in recess.

[Whereupon, at 12:17 p.m., the Committee was adjourned.]

[1] The questions submitted by Senator Stevens for Mr. Leventhal appears on page 336 and questions submitted by Senator Stevens for Mr. Fertel appears on page 350.

APPENDIX

United States General Accounting Office

GAO

Testimony

Before the Committee on Governmental Affairs
United States Senate

For Release on Delivery
Expected at
9:30 a.m. EST
Wednesday
February 28, 1996

NUCLEAR NONPROLIFERATION

Concerns With the U.S. International Nuclear Materials Tracking System

Statement by Victor S. Rezendes
Director, Energy, Resources, and Science Issues
Resources, Community, and Economic Development Division

GAO/T-RCED/AIMD-96-91

Mr. Chairman and Members of the Committee:

We are pleased to be here today to testify on the ability of the United States to track exported U.S. nuclear materials as the Congress deliberates the proposed Agreement for Cooperation between the United States and the European Atomic Energy Community Concerning the Peaceful Uses of Atomic Energy (U.S.-EURATOM agreement). This agreement controls the exports of certain nuclear materials, nuclear reactors, and their major components and parts between the United States and 15 western European countries.[1] Keeping track of the growing amount of nuclear materials is especially important because of the breakup of the Soviet Union and increases in both domestic and international terrorism. Our testimony is primarily based on three reports addressed to this Committee.[2]

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[1]EURATOM is composed of the following 15 countries: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden, and the United Kingdom. These countries are treated as a single entity for the purposes of trade in and transfers of nuclear materials to the United States.

[2]Nuclear Nonproliferation: U.S. International Nuclear Materials Tracking Capabilities Are Limited (GAO/RCED/AIMD-95-5, Dec. 27, 1994); Nuclear Nonproliferation: Information on Nuclear Exports Controlled by the U.S.-EURATOM Agreement (GAO/RCED-95-168, June 16, 1995); Department of Energy: Poor Management of Nuclear Materials Tracking System Makes Success Unlikely (GAO/AIMD-95-165, Aug. 3, 1995).

In summary, DOE's nuclear materials tracking system, which serves as the primary source of information for the United States to track U.S. nuclear materials exported to foreign countries, has significant limitations. Furthermore, recent information suggests that DOE's replacement tracking system faces a high probability of failure because it has not been completely developed and tested.

In 1994, we reported that DOE's system for tracking nuclear materials exported to foreign countries does not have all the information needed to track the specific current location (facility) and status of all nuclear materials of U.S. origin. The system does not contain this information primarily because the amounts and types of data and the reliability of the data entered into the system depend largely on the data-reporting requirements under international agreements for peaceful nuclear cooperation, such as the proposed U.S.-EURATOM agreement, as well as on the willingness of foreign countries and of U.S. and foreign facilities to report complete and accurate data. For example, the U.S. tracking system may not contain correct and current data on which EURATOM country has U.S.-supplied nuclear materials or at what facilities these materials are located. According to a State Department official, negotiations are under way to develop an administrative arrangement through which EURATOM would, among other things, annually report to the United States the amount of U.S.-origin material within EURATOM. However, this information would not show the amounts of nuclear material on a country-by-country or facility-by-facility basis.

Further complicating the lack of complete tracking data, the databases operated by DOE, NRC, and the Department of Commerce, which account for exports of nuclear materials, show differences in the amounts of nuclear materials exported. In June 1995, we reported that NRC's export licensing database, DOE's tracking system database, and Commerce's National Trade Data Bank did not agree on the amount of materials exported. Our analysis of the data from these databases shows that from 1980 through 1994, the United States exported about 32.6 million kilograms (kg) and about 11 million kgs of nuclear materials to EURATOM and Japan, respectively, and Japan transferred about 4.7 million kgs of U.S.-origin nuclear materials to EURATOM. The value of the U.S. nuclear material exported from 1989 through August 1994 was about $1.1 billion for EURATOM and $4 billion for Japan.

Moreover, DOE may have missed an opportunity to improve its nuclear materials tracking system. In August 1995, we reported that DOE's planning for a replacement tracking system was undisciplined and poorly controlled. As a result, we stated that the replacement system's success was unlikely. We concluded that DOE's disregard for basic system development practices was inconsistent with the importance of the system and that it was not in DOE's best interest to disconnect the existing tracking system and replace it with an undocumented and untested new

system. However, DOE stopped using the existing system on September 1, 1995, and replaced it with the new tracking system.

Before discussing these issues further, we would like to provide some background information on DOE's nuclear materials tracking system.

BACKGROUND

Hundreds of tons of plutonium and highly enriched uranium have accumulated worldwide, and inventories of plutonium are expected to continue to grow in years to come as a result of reprocessing or recovering activities. Tracking and accounting for these and other nuclear materials are important to 1) ensure that nuclear materials are used only for peaceful purposes; 2) help protect nuclear materials from loss, theft, or other diversion; 3) comply with international treaty obligations; and 4) provide data to policymakers and other government officials.

The United States regulates and controls its exports of civilian-use nuclear materials through three mechanisms--agreements for cooperation, export licenses, and subsequent arrangements (regulatory controls over certain cooperative arrangements for the supply, use, or retransfer of nuclear materials). Certain controls in the agreements for cooperation are designed to assure both the United States and the recipient nation or group of nations that materials transferred

between parties will be used for authorized purposes only and will be properly safeguarded. DOE's tracking system contains data on nuclear materials supplied and controlled under international agreements, foreign contracts, import/export licenses, government-to-government approvals, and other DOE authorizations, such as authorizations to retransfer U.S.-supplied nuclear materials between foreign countries. The tracking system also maintains and provides DOE with information on domestic production and materials management, safeguards, physical accountability, financial and cost accounting, and other data related to nuclear materials accountability and safeguards for NRC licenses.

U.S. ABILITY TO TRACK NUCLEAR MATERIALS INTERNATIONALLY IS LIMITED

In December 1994, we reported that the U.S. system for tracking nuclear materials exported to foreign countries[3] did not have all the information needed to track the specific current location (facility) and status of nuclear materials of U.S. origin. For example, the system does not track exported U.S. nuclear materials that are moved from facility to facility within countries, nor does it show the current status of nuclear materials (e.g., irradiated, unirradiated, fabricated, burned up, or reprocessed). The system does not contain this information primarily because the

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[3]DOE's tracking system is known as the Nuclear Materials Management and Safeguards System (tracking system).

amounts and types of data and the reliability of the data entered into the system depend largely on the data-reporting requirements under international agreements for peaceful nuclear cooperation, as well as on the willingness of foreign countries and of U.S. and foreign facilities to report complete and accurate data. For example, neither the previous nor the proposed U.S.-EURATOM agreement requires EURATOM countries to inform the United States of retransfers of U.S.-supplied nuclear materials from one EURATOM country to another or to report alterations to the status of U.S.-supplied nuclear materials in these countries. In addition, none of the existing agreements for cooperation require foreign countries to report intracountry transfers of U.S.-supplied nuclear materials from one facility to another. According to a State Department official, negotiations are under way with EURATOM to develop an administrative arrangement through which EURATOM would, among other things, annually report to the United States the amount of U.S.-origin material within EURATOM. However, this information would not show the amounts of nuclear material on a country-by-country or facility-by-facility basis.

At the time of our review, the tracking system did contain data on the status of U.S.-supplied nuclear materials in Sweden, Australia, and Canada because the United States performed annual reconciliations with these countries. These reconciliations compared the U.S. tracking system's data with records from each of the foreign countries. The U.S. tracking system's data were then adjusted, where necessary, to reflect the current status of U.S.-supplied materials in each of these

countries. However, for foreign countries that did not participate in reconciliations with the United States, the tracking system contained data only on export transactions and on transactions requiring U.S. approval that occurred after export, as required by the agreements for cooperation. At the time of our review, the United States had started an initial nuclear materials reconciliation with Japan.

According to DOE officials, DOE's tracking system was not intended or designed to track foreign countries' nuclear materials that were never imported into the United States. Accordingly, the United States relies on other sources to obtain information on nuclear materials of both U.S. and foreign origin that are located in foreign countries. For example, the United States relied on DOE and other agencies to help determine the quantity, location, origin, and characteristics of commercial plutonium in noncommunist countries. DOE also uses data provided by intelligence sources and technology to support nuclear materials nonproliferation programs.

U.S. Databases Differ on the Amounts of Nuclear Materials Exported

In developing information on nuclear exports controlled by the U.S.-EURATOM agreement (see app. I), we found that U.S. databases containing export information--specifically, NRC's export licensing database, DOE's tracking system database, and Commerce's National Trade Data Bank--did not agree on the amounts of materials exported. For example, in its comments on our draft report, NRC noted

differences between Commerce's database and NRC's export licensing database. Specifically, NRC officials said that they were puzzled by the reported plutonium sales to countries, particularly Denmark, Greece, and Portugal. At the time our report was issued, NRC officials said that these countries had very small nuclear research programs and no nuclear power programs; therefore, the officials doubted that these countries had, in fact, imported plutonium from the United States. In addition, NRC's export licensing database showed no licenses for exports to Greece or Portugal, one small (0.005 kg) plutonium export case for Denmark, and only three plutonium export cases for Spain. However, NRC noted that U.S-supplied nuclear materials to any country within EURATOM can be freely transferred within EURATOM without prior notification to, or approval by, the United States. Hence, according to NRC, it was possible, although not likely, that U.S.-supplied plutonium had gone to the countries in question and had been reported to Commerce's database without appearing in NRC's export licensing records.

Our analysis of the data from DOE's and Commerce's databases shows that from 1980 through 1994, the United States exported about 32.6 million kgs and about 11 million kgs of nuclear materials to EURATOM and Japan, respectively, and Japan transferred about 4.7 million kgs of U.S.-origin nuclear materials to EURATOM. The value of the U.S. nuclear material exported from 1989 through August 1994 was

about $1.1 billion for EURATOM and $4 billion for Japan.[4] Depleted, natural, and enriched uranium were the largest components of the nuclear materials exported to EURATOM and Japan.

POOR MANAGEMENT MAKES SUCCESS OF REPLACEMENT NUCLEAR MATERIALS TRACKING SYSTEM UNLIKELY

In December 1994 and August 1995, we reported on DOE's progress in developing a new nuclear materials tracking system. Because the previous tracking system was an older computerized system, DOE decided to replace and modernize it. However, DOE decided merely to replicate the functions of the existing system, whose limitations will, therefore, remain. In December 1994, we reported that DOE had not adequately planned the development of the new replacement system. For instance, DOE did not identify users' needs or adequately explore design alternatives that would best achieve these needs in the most economic fashion. DOE could have reduced the likelihood that these planning deficiencies would occur by following the software development requirements set forth in its own software management order. Accordingly, we recommended that DOE determine users' requirements, investigate alternatives, conduct cost-benefit analyses, and develop a plan to meet identified needs before investing further resources in a new tracking system. However, DOE

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[4]We reported on the amount and value of the U.S.-origin nuclear materials exported to Japan because the expiration of the U.S.-EURATOM agreement would prohibit Japan from transferring U.S.-origin nuclear materials to EURATOM.

continued to develop the system without performing these steps because it believed that its planning was sufficient and that delaying the implementation of the replacement system would not be cost-effective. DOE provided no analysis to support this assertion.

In August 1995, we reported that the planning risks identified in our previous report were magnified by additional system development risks that DOE was not adequately addressing. For example, the subcontractor developing the replacement tracking system had not documented the system's development process. Because little system documentation existed and the contract did not require any interim deliverables describing the progress of the system's development before the complete system's delivery, DOE could not determine the status of the system's development. In addition, the subcontractor did not place the software under configuration management. Sound configuration management helps ensure that the status of the system's software is known at all times and that, when more than one programmer is making changes and updating the software, all changes are consistent and are being written to the same software version.

Finally, we found that DOE planned to pay for, install, and use the replacement tracking system without requiring that it pass acceptance testing. Acceptance testing demonstrates that a system meets hardware, software, and performance requirements and users' operational needs. Though always important,

such testing seems particularly critical in light of DOE's inadequate planning and the lack of basic system development discipline and sound practices. Without acceptance testing, DOE has no assurance that the replacement tracking system will ever perform as intended. Therefore, we recommended that DOE immediately terminate any further development of the replacement system and continue using its existing tracking system. However, on September 1, 1995, DOE stopped using the existing tracking system and began using the replacement tracking system. We believe that the size and complexity of DOE's nuclear materials tracking system and its pivotal role in meeting U.S. treaty and statutory obligations should have compelled DOE to ensure that the system was planned and designed properly to ensure its accuracy.

Recent information from officials familiar with DOE's replacement tracking system have also raised concerns about the replacement system. Specifically, in a December 6, 1995, report, the Lawrence Livermore National Laboratory technical advisory committee that was responsible for overseeing the development of the replacement tracking system concluded that this system faced a high probability of failure because the system had not been completely developed and tested. As a result, the Committee recommended that the replacement system not be accepted as delivered.

Mr. Chairman, this concludes my prepared statement. We would be happy to answer any questions that you or Members of the Committee may have.

INFORMATION ON NUCLEAR EXPORTS CONTROLLED BY U.S.-EURATOM AGREEMENT (1980-94)

The largest amount of U.S. nuclear materials exported to EURATOM and Japan during the last 15 years consisted of depleted, natural, and enriched uranium. Table I.1 shows the total amount of U.S. nuclear materials exported to EURATOM from 1980 through 1994 that are controlled by the agreement. Table I.2 summarizes the total amount of nuclear materials exported to Japan during the same period.

Table I.1: Summary of U.S. Nuclear Materials Exported to EURATOM, 1980-94

In kilograms

Nuclear material	Quantity
Depleted uranium	14,649,985.000
Natural uranium	11,886,101.000
Enriched uranium	6,049,307.000
Thorium	3,188.000
Uranium-233	0.062
Plutonium	32.800
Plutonium-242	0.094
Plutonium-238	0.099

Table I.2: Summary of U.S. Nuclear Materials Exported to Japan, 1980-94

In kilograms

Nuclear material	Quantity
Enriched uranium	10,031,810.000
Natural uranium	917,621.000
Depleted uranium	7,937.000
Thorium	2,705.000
Uranium-233	0.056
Plutonium	2.420
Plutonium-242	0.007
Plutonium-238	0.019

QUANTITIES OF U.S.-ORIGIN NUCLEAR MATERIALS

TRANSFERRED FROM JAPAN TO EURATOM FROM 1980-94

Japan uses enriched and natural uranium as fuel for nuclear power reactors. The used or spent fuel is transferred to EURATOM for reprocessing, which chemically separates the depleted uranium and plutonium. Enriched uranium, totaling 4,542,383 kgs, was the largest component of the U.S.-origin nuclear materials transferred from Japan to EURATOM. From 1980 through 1994, Japan transferred to EURATOM between 115,651 kgs and 404,935 kgs annually of enriched uranium. Japan also exported about 37,187 kgs of plutonium to EURATOM during this period.

Table I.3 summarizes the total amount of U.S.-origin nuclear materials that Japan transferred to EURATOM during the period.

Table I.3: Summary of U.S.-Origin Nuclear Materials Transferred From Japan to EURATOM, 1980-94

In kilograms

Nuclear material	Quantity
Enriched uranium	4,542,383.000
Depleted uranium	98,178.000
Plutonium	37,187.000

EXPORTS OF REACTORS AND REACTOR COMPONENTS

According to NRC officials, no nuclear power reactors were exported to EURATOM or Japan from 1980 through 1994. However, NRC issued licenses for the export of four major reactor components to EURATOM in 1986, 1991, and 1992. These components were for use in research and in nuclear power reactors. In addition, the United States has exported nuclear reactor equipment and components to Japan annually between 1980 and 1994 under NRC's general licenses.

DOLLAR VALUE OF U.S. NUCLEAR EXPORTS
TO EURATOM AND JAPAN
FROM 1989 THROUGH AUGUST 1994

We obtained the dollar values of the uranium and plutonium exports from the Department of Commerce's National Trade Data Bank. However, this database excludes the costs of loading the merchandise aboard the exporting carrier and of freight, insurance, and any other charges or transportation costs incurred beyond the port of exportation. The reliability of the data also depends on the accuracy of the reporting by shippers on their export declarations. According to the Department of Commerce's database, the dollar value of U.S. exports to EURATOM countries of uranium (natural, enriched, and depleted) and plutonium in 1989 through August 1994 was about $1.1 billion. The value of these U.S. exports to Japan for the same period was about $4 billion.

U.S.URANIUM ENRICHMENT SERVICES

According to U.S. nuclear industry officials, the value of the services related to exported nuclear materials, such as uranium mining, enrichment, and fuel fabrication, should be factored into the value of U.S. nuclear exports. In the past, DOE provided uranium enrichment services to EURATOM and Japan. In 1993,

uranium enrichment services were transferred to the U.S. Enrichment Corporation (USEC), a government-owned corporation, which was created to operate the U.S.-owned uranium enrichment plants and to market enrichment services. We contacted DOE and USEC to obtain the amount billed to EURATOM and Japan for enrichment services from 1989 through 1994. According to information from DOE, EURATOM was billed a total of $167,527,507 for enrichment services in fiscal years 1989 through 1993. Japan was billed a total of $1,593,567,205 for the same period.

The amounts billed by DOE included the cost of enriching the uranium delivered to the enrichment plant and of packaging and handling the services at the enrichment plant. The enriched uranium is delivered to the customer at the enrichment plant, but its cost does not include the cost of any subsequent services, such as fabricating reactor fuel assemblies. According to USEC, the amount billed under Japanese contracts for the period from 1989 through 1994 was $350 million to $400 million per year.

U.S. NUCLEAR INDUSTRY'S VIEWS ON POTENTIAL IMPACT OF NONRENEWAL OF AGREEMENT ON NUCLEAR COMMERCE WITH EURATOM AND JAPAN

Industry representatives anticipate that if the U.S.-EURATOM agreement is allowed to expire, EURATOM and Japan would turn to suppliers of nuclear products and services outside the United States. U.S. participation in the European nuclear markets would be greatly reduced. In addition, because Japan also exports U.S.-origin spent fuel to EURATOM for reprocessing, Japan would be less likely to purchase uranium fuel sources from the United States in the future. The absence of a U.S.-EURATOM agreement would prohibit Japan from transferring this U.S.-origin spent fuel for reprocessing in any EURATOM country.

Furthermore, these industry representatives point out that nuclear commerce includes establishing and maintaining relationships with customers and guaranteeing reliable supplies and services to them. A break in any of these ties, such as a failure to renew the U.S.-EURATOM agreement, would weaken the U.S. nuclear industry substantially, because the industry needs both its domestic and foreign markets. According to U.S. nuclear industry representatives, the nuclear industry is a market industry that can exist only in a global environment.

According to USEC officials, if the U.S.-EURATOM agreement for cooperation expires, USEC's future enrichment services would be seriously affected. Specifically, existing contracts with EURATOM, worth approximately $160 million, could be terminated. Other contracts, valued at approximately $470 million, would be in jeopardy. Another $1.8 billion in potential new business from EURATOM and Japan might be lost. According to a nuclear industry representative, the U.S. share of the European nuclear industry market currently is about $100 million and may reach $300 million annually after the year 2000. In addition, Japan currently is the largest single foreign purchaser from U.S. suppliers of nuclear power systems equipment, materials, and services. In the next 5 years, according to industry officials, anticipated U.S. participation in construction, equipment, start-up services, spare parts, and fuel for 10 nuclear power plants in Japan is expected to amount to about $500 million to $800 million annually throughout the plants' lives.

(170268)

United States General Accounting Office

GAO

Report to Congressional Requesters

December 1994

NUCLEAR NONPROLIFERATION

U.S. International Nuclear Materials Tracking Capabilities Are Limited

GAO/RCED/AIMD-95-5

GAO

United States
General Accounting Office
Washington, D.C. 20548

B-259533

December 27, 1994

The Honorable Charles E. Schumer
House of Representatives

The Honorable John Glenn
Chairman, Committee on Governmental
Affairs
United States Senate

This report responds to your request for information on how the United States tracks its exported civilian (nondefense-use) nuclear materials and ensures their physical protection. Specifically, this report (1) describes the capability of the Department of Energy's (DOE) computerized Nuclear Materials Management and Safeguards System (NMMSS) to track the international movement of nuclear materials, (2) assesses the adequacy of DOE's planned new NMMSS, and (3) provides information on how the United States ensures the physical protection of nuclear materials of U.S. origin that are exported.

Results in Brief

The United States relies primarily on the NMMSS to track the nuclear materials exported to foreign countries. However, this system does not have all the information needed to track the specific current location (facility) and status of all nuclear materials of U.S. origin that are supplied to foreign countries. For example, the system does not track exported U.S. nuclear materials that are moved from facility to facility within countries, nor does it show the current status of the nuclear materials (e.g., irradiated, unirradiated, fabricated, burned up, or reprocessed). Thus, the NMMSS may not contain correct data on where (at which facility) these materials are located within foreign countries or on their current status. The system does not contain this information primarily because the amounts, types, and reliability of data contained in the NMMSS depend largely on the data required to be reported under international agreements for peaceful nuclear cooperation, as well as on foreign countries' and U.S. and foreign facilities' willingness to report complete and accurate data.

Since the NMMSS is an older mainframe-based system, DOE decided to modernize it using PC technology. However, since DOE's new NMMSS will replicate the current NMMSS' functions, the new system will contain the same tracking limitations that existed previously. Thus, the data contained in the new NMMSS on the location and status of U.S.-supplied nuclear materials internationally will continue to be limited by the data reported

under the agreements for cooperation. Moreover, DOE did not adequately plan the development effort for the new NMMSS. In planning the new system, DOE did not follow sound systems development practices. Furthermore, DOE did not identify and define the users' needs or adequately explore design alternatives that would best achieve these needs in the most economic fashion. Therefore, DOE cannot ensure that it chose the most cost- effective alternative or developed a system that will meet users' needs.

Neither DOE's current nor planned new nuclear materials tracking system was intended to provide or contain data on nuclear materials of foreign origin that were never imported into the United States. Accordingly, DOE and other agencies collect information on the status of U.S. and non-U.S. nuclear materials worldwide through other sources. However, these sources are limited in their ability to obtain accurate data in certain countries.

The U.S. government's ability to ensure that exported nuclear materials are adequately protected is limited because that ability is contingent on foreign countries' cooperation. Many members of the international community, including the United States, believe that the physical protection of nuclear materials is the responsibility of the individual country. Therefore, the United States must rely on the individual country's commitment to comply with voluntary international guidelines for physical protection. While the United States conducts on-site physical protection evaluations of facilities in countries with U.S.-supplied nuclear materials, recommendations that may result from these visits are not binding on the country.

Background

Hundreds of tons of plutonium and highly enriched uranium (HEU) have accumulated worldwide, and inventories of plutonium are expected to continue to grow in years to come as a result of reprocessing[1] or recovering activities. Tracking and accounting for these and other nuclear materials are important in order to (1) ensure that nuclear materials are used only for peaceful purposes; (2) help protect nuclear materials from loss, theft, or other diversion; (3) comply with international treaty obligations; and (4) provide data to policymakers and other government officials.

[1]Reprocessing is the chemical separation of usable uranium and plutonium from spent nuclear reactor fuel.

The United States regulates and controls its exports of civilian-use nuclear materials through three mechanisms—agreements for cooperation, export licenses, and subsequent arrangements. Subsequent arrangements refer to the regulatory controls over certain cooperative arrangements for the supply, use, or retransfer[2] of nuclear materials. Certain controls in the agreements for cooperation are designed to assure both the United States and the recipient nation or group of nations that materials transferred between parties will be used for authorized purposes only and will be properly safeguarded. (See app. I for a discussion of U.S. export license processes.) As of November 1994, the United States had 29 agreements for cooperation with other countries.

In addition, the United States, as well as many members of the international community, relies on the International Atomic Energy Agency (IAEA) to develop and enforce effective international safeguards—technical measures designed to detect the diversion of significant quantities of nuclear materials from peaceful uses—for nuclear materials of U.S. and non-U.S. origin.

The U.S. agreement with IAEA, as well as some of the U.S. agreements for cooperation, requires the United States to maintain a system of accounting and control over source and special nuclear materials.[3] In addition, the United States reports data to IAEA on nuclear materials imported by and exported from the United States. DOE's automated tracking system, the NMMSS, is used to fulfill these accounting, controlling, and reporting obligations for U.S.-supplied international nuclear materials. DOE and the Nuclear Regulatory Commission (NRC) cosponsor the NMMSS, and it is managed and operated by a DOE contractor—Martin Marietta Energy Systems, Incorporated.

The NMMSS has been used to account for U.S. imports and exports of nuclear materials since 1977. The NMMSS data base contains data on U.S.-supplied international nuclear materials transactions, foreign contracts, import/export licenses, government-to-government approvals, and other DOE authorizations, such as authorizations to retransfer U.S.-supplied materials between foreign countries. The NMMSS also maintains and provides DOE with information on domestic production and

[2]A retransfer is the transport from one foreign country to another of nuclear materials previously exported from the United States or the materials produced through the use of nuclear materials previously exported by the United States.

[3]Special nuclear materials are plutonium, uranium-233, and uranium enriched above 0.711 percent by weight in the isotope uranium 235.

materials management, safeguards, physical accountability, financial and cost accounting, and other information related to nuclear materials. In addition, the NMMSS provides NRC with data on nuclear materials accountability and safeguards for NRC licensees.

U.S. Ability to Track Nuclear Materials Internationally Is Limited

The United States relies primarily on the NMMSS to track the nuclear materials that it exports to foreign countries. However, this system does not have all of the information needed to track the current location and status of all nuclear materials of U.S. origin that are supplied to foreign countries. The amounts, types, and reliability of the data contained in the NMMSS depend largely on data reported under the international agreements for cooperation, as well as on foreign countries' and on U.S. and foreign facilities' willingness to report complete and accurate data.

NMMSS Does Not Track the Current Status and Location of Exported Nuclear Materials

The NMMSS' international tracking capability is limited primarily because the agreements for cooperation do not require foreign countries to report data on the current locations of U.S.-supplied nuclear materials. For example, as we reported in 1982 and 1985,[4] the U.S. agreement for cooperation with the European Atomic Energy Community (EURATOM)[5] does not require most EURATOM countries to inform the United States of retransfers of U.S.-supplied materials from one EURATOM country to another EURATOM country, or to report alterations to U.S.-supplied nuclear materials in most of these countries.[6] In addition, none of the existing agreements for cooperation require foreign countries to report intracountry transfers of U.S.-supplied materials from one facility to another. Thus, the NMMSS may not contain correct and current data on either which EURATOM country has U.S.-supplied nuclear materials or at what specific facilities these materials are located.

The NMMSS' international tracking capability also is limited because the data base does not contain certain data on the current status (i.e., whether

[4]Obstacles to U.S. Ability to Control and Track Weapons-Grade Uranium Supplied Abroad (GAO/ID-82-21, Aug. 2, 1982) and The U.S. Nuclear Materials Information System Can Improve Service to Its User Agencies (GAO/NSIAD-85-28, Jan. 14, 1985).

[5]EURATOM is composed of 12 countries: Belgium, Denmark, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, and the United Kingdom. These countries are treated as a single entity for the purposes of trade in and transfer of nuclear materials to and from the United States.

[6]Although Portugal and Spain are members of EURATOM, according to a DOE official they are subject to agreements for cooperation with the United States that predate their joining EURATOM. Therefore, most of the reporting exceptions in the EURATOM agreement do not apply.

the materials are irradiated, unirradiated, fabricated, burned up, or reprocessed) of all U.S. nuclear materials that have been exported to foreign countries, with the exception of Sweden, Australia, and Canada. The NMMSS contains status data about U.S.-supplied nuclear materials in these three countries because the United States performs annual reconciliations with them.[7] The reconciliations compare the NMMSS' data to the foreign countries' records. The NMMSS' data are then adjusted, where necessary, to reflect the current status of U.S.-supplied materials in those countries. However, for foreign countries that do not participate in reconciliations with the United States, the NMMSS contains data only on the export transactions and on transactions requiring U.S. approval (such as retransfers of the nuclear materials) that occurred subsequent to the export, as required by the agreements for cooperation.

The United States has also started an initial nuclear materials reconciliation with Japan, which illustrates the potential for substantial differences between data recorded in the NMMSS and the current status of U.S.-supplied nuclear materials in a foreign country. According to the NMMSS' data, Japan produced approximately 20.3 metric tons of plutonium from U.S.-supplied nuclear materials between 1978 and 1992. However, Japanese records indicated that Japan produced about 58.7 metric tons of plutonium from U.S. nuclear materials during that period. The DOE official who is performing the reconciliation cited two primary reasons for this difference. First, Japan was required to report to the United States only the amount of plutonium retransferred to other countries for reprocessing; thus, plutonium produced but not sent to other countries for reprocessing was not reported to the United States. Second, the current U.S.-Japanese agreement requires Japan to report certain retransferred-plutonium transactions under a unique quarterly reporting arrangement. The NMMSS was not modified to reflect this unique reporting arrangement and therefore did not contain data on the amount of plutonium that Japan reprocessed from U.S.-supplied nuclear materials after July 17, 1988—the date of the new agreement. A DOE official stated that the NMMSS was recently modified to accept this reporting arrangement, and Martin Marietta has begun entering these data in the system.

Reliability of NMMSS' Data Contingent on Complete and Accurate Reporting

The reliability of the NMMSS' data is also contingent on the willingness of foreign countries and U.S. and foreign facilities to report complete and accurate data on nuclear materials imports, exports, and retransfers.

[7]Sweden, Canada, and Australia have been fully reconciled through 1987, 1991, and 1993, respectively. A DOE official stated that, except for minor unresolved differences, reconciliations performed for Sweden and Canada through 1992 also have been completed and the NMMSS' data have been updated.

Although the NMMSS users whom we interviewed, such as members of the NMMSS Steering Committee,[8] were generally or very satisfied with the accuracy and completeness of information from the NMMSS, DOE occasionally has found instances of incomplete reporting while reconciling nuclear materials transactions. For example, in 1990 a reconciliation of the NMMSS' data with a foreign country's records identified several transactions, such as retransfers of low-enriched uranium, that had not been reported to the United States. These transactions were subsequently entered into the NMMSS. However, because the NMMSS does not distinguish between normal transactions and those added during the reconciliation process, we could not determine how many other NMMSS entries were added as a result of reconciliations with foreign countries. A DOE official stated that many transactions may be added to the NMMSS during the initial reconciliation with a foreign country, but in later years such entries are infrequent.

The extent to which the NMMSS can provide data on nuclear materials is also affected by the accuracy and availability of historical records. We have previously reported on problems in this area. For example, in 1985 we reported numerous errors in the international data contained in the NMMSS.[9] These errors resulted from inaccurate data entries as well as from missing documents of some historical transactions. A DOE official told us that DOE attempted to upgrade the accuracy of the NMMSS' international data by searching for old records documenting historical transactions. This official stated that the current NMMSS data base contains the best available data on historical transactions, given the limitations of these records. Some NMMSS users also told us that although older NMMSS data are sometimes inaccurate, they are the best data available.

DOE Used Poor Systems Development Practices in Modernizing NMMSS

Because the NMMSS was an older system, DOE decided to replace and modernize it. However, DOE decided to merely replicate the functions of the current NMMSS, and therefore its limitations will remain. In addition, DOE did not adequately plan the development effort for the new NMMSS. For instance, DOE did not identify and define users' needs or adequately explore design alternatives that would best achieve these needs in the most economic fashion. DOE could have reduced the likelihood that these

[8]The Steering Committee is a NMMSS user group composed of representatives from each of DOE's operations and naval reactor offices, the Office of the Chief Financial Officer, the Office of Arms Control and Nonproliferation, the Office of Weapons and Materials Planning, the Office of Safeguards and Security, and NRC's Office of Nuclear Material Safety and Safeguards and Office of International Programs.

[9]GAO/NSIAD-85-28, Jan. 14, 1985.

planning deficiencies would occur by following the software development requirements set forth in its own software management order.

DOE's Modernized NMMSS Will Replicate Current System's Functions

Martin Marietta's NMMSS is housed on a mainframe using unstructured COBOL code. Performing modifications on the NMMSS and designing custom reports is difficult because of the volume and complexity of the code. As a result, DOE believed that the NMMSS' operating costs could be reduced by modernizing the system's hardware and software. In addition, NRC supported DOE's decision to modernize the NMMSS' hardware and software because it believed that the replacement NMMSS would be less costly than Martin Marietta's existing system. Accordingly, DOE's Office of Arms Control and Nonproliferation tasked the Lawrence Livermore National Laboratory with developing a new NMMSS data base that would replicate the functions of Martin Marietta's NMMSS. Livermore hired a subcontractor to perform this task. Livermore's subcontractor wrote new software, developed a PC-based data base, and will operate the new NMMSS at its facility.

DOE Did Not Determine Users' Requirements

In planning for the development of the new NMMSS, DOE did not analyze the users' requirements. Such an analysis documents the organization's functional and informational needs, the current system and its effectiveness, and the organization's future needs. Such information is important because the more knowledge that is generated about potential system users and their operational needs, the more likely it is that the resulting system will meet the users' needs. In addition, identifying users' needs at the beginning of a development effort can help to reduce the need for later systems modifications, which are typically more expensive, and to eliminate the need for separate development efforts. Since the NMMSS' primary functions were developed during the late 1960s (for DOE facilities) and 1970s (for international reporting), it was particularly important that DOE, before the subcontractor's development effort, determine whether the NMMSS was meeting users' needs in the most effective manner, or whether changes in the design of the data base were needed to better serve its users.

DOE could have assessed users' needs by involving the NMMSS Steering Committee, which is composed of the major NMMSS users, in the new NMMSS planning process. Although the NMMSS Steering Committee is charged with reviewing and commenting on significant proposed changes to the NMMSS, it was not consulted about the conversion from Martin Marietta's NMMSS to

the subcontractor's new NMMSS. Most of the Steering Committee members were unaware that DOE was even considering a new system until months after the decision to develop a new NMMSS was initiated. Some Steering Committee members told us they felt that they were deliberately kept in the dark about the new NMMSS. For example, one Steering Committee member said he believed written notification of the new NMMSS was not provided because DOE headquarters did not want to give users the opportunity to raise any objections to the program. Another member said the Committee members felt that they had been ignored and misled about the proposed changes in the NMMSS' operations. Furthermore, several Committee members and other NMMSS users wrote to DOE's Office of Nonproliferation and National Security to express dissatisfaction that no effort had been made to involve the Steering Committee in the departmental decision-making process.

In explaining why users' requirements were not assessed, DOE officials stated that since the new NMMSS data base will duplicate the existing NMMSS' functions, a requirements analysis was unnecessary. They stated that users will be consulted on future enhancements to the data base. However, such an approach can result in a data base that perpetuates system weaknesses and leads to inefficiencies. For example, the current NMMSS' financial module does not contain all of the inventory valuation data needed by DOE's Office of the Chief Financial Officer (CFO). Since the new NMMSS is replicating the current NMMSS' functions, it too will not contain these data. In addition, because the Office of the CFO was not aware that changes to the NMMSS were being considered, in August-September 1993 the Office of the CFO sponsored, and a programmer began developing, a new system to satisfy these needs. An official within the Office of the CFO told us that if the Office had known about the new NMMSS development effort, they would have considered working with the new NMMSS development team to enhance the NMMSS' financial module, rather than developing a separate new system.

DOE Did Not Adequately Consider System Alternatives

The purpose of an alternatives analysis is to compare and evaluate the costs and benefits of various alternatives for meeting users' requirements and to determine which alternative is most advantageous to the government. However, DOE did not perform such an analysis for the new NMMSS development effort. Instead, DOE's analysis was limited to a cost comparison of two alternatives: (1) to have Martin Marietta modernize the NMMSS or (2) to have the Livermore subcontractor provide a new NMMSS data base. Furthermore, this analysis did not assess the benefits of the two

alternatives and was not used to determine which alternative was most advantageous to the government because it was prepared after DOE had already chosen to implement the second alternative.

In addition, because the new NMMSS will simply replicate the current NMMSS' functions, it will be subject to the same nuclear materials tracking limitations that existed previously. Thus, the data contained in the new NMMSS on the status and location of U.S.-supplied nuclear materials internationally will continue to be limited by the data reported under the agreements for cooperation.

In addition, the comparison of costs for the two alternatives cited in the analysis was not supported by adequate documentation and did not appropriately consider all relevant costs to ensure that DOE chose the most cost-effective alternative. Moreover, DOE had already decided to authorize the subcontractor to begin building the new NMMSS before this analysis was prepared.

DOE's cost analysis compared the estimated development cost and fiscal years 1994, 1995, and 1996 operating costs of the subcontractor's new NMMSS data base with Martin Marietta's upgrade proposal for the NMMSS. However, the documentation provided to support this analysis was inadequate. Specifically, the only documentation offered in support of the new NMMSS was a one-page document provided by Livermore's subcontractor, which DOE did not independently verify.

The cost analysis was also inadequate because it (1) did not include costs to develop the new NMMSS incurred by Livermore's subcontractor before the analysis; (2) included fiscal year 1997 costs in Martin Marietta's alternative but not in the subcontractor's alternative; (3) did not reduce Martin Marietta's estimated costs by the amount of indirect costs[10] that will continue to be incurred by Martin Marietta (and paid by DOE) even if Martin Marietta no longer operates the NMMSS; and (4) included the NMMSS' operating costs during development in the estimate for Martin Marietta's alternative but did not include these costs in the subcontractor's estimate. DOE's cost comparison also did not take into account the considerable costs to transition from Martin Marietta's NMMSS to the new NMMSS data base housed at the Livermore subcontractor's location. Moreover, the analysis did not consider any costs that Livermore will incur managing and overseeing the subcontractor's development of the new NMMSS.

[10]Indirect costs refer to costs (such as administrative expenses) that cannot be identified with a specific project or activity and are allocated to these programs on the basis of a causal/beneficial relationship. Many of these costs will continue to be incurred and allocated to other DOE programs.

We analyzed the cost documentation that DOE provided, taking the above factors into consideration. Although we could not determine with certainty whether DOE chose the more cost-effective alternative, since some cost data were not available, our analysis did determine that any potential savings are, at best, questionable and that upgrading Martin Marietta's NMMSS may have been a more cost-effective option.

Because of the flaws in DOE's initial cost analysis, we asked DOE to provide us with a total life cycle cost for the new NMMSS. As of November 21, 1994, DOE could not provide us with this information.

DOE Did Not Follow Its Own Software Management Order

Many of the new NMMSS' planning deficiencies could possibly have been avoided if DOE's Office of Information Resource Management Policy, Plans, and Oversight had been involved in the development effort. DOE's Computer Software Management order (DOE 1330.1D) requires that this Office approve or disapprove all administrative or manufacturing-oriented software acquisition or development efforts that will have an external impact.[11] An official in the Office of Information Resource Management Policy, Plans, and Oversight told us that both the current NMMSS and the new NMMSS fall under the software categories covered by this order. Another official in this Office stated that adequate requirements and alternatives analyses (including the costs and benefits of alternatives) are required before approval is granted. However, the Office of Arms Control and Nonproliferation neither sought nor received such approval for the new NMMSS development effort. DOE's Program Manager told us that he believed the DOE order did not apply because the new NMMSS was duplicating an already existing system. However, the order does not exclude software development efforts that duplicate existing systems.

Other U.S. Mechanisms to Track Nuclear Materials Have Limitations

According to DOE, the NMMSS was not intended or designed to track foreign countries' nuclear materials that were never imported to the United States. Accordingly, since the new NMMSS is replicating the functions of Martin Marietta's NMMSS, the new system will also have this limitation. Recognizing that the NMMSS does not contain such data, and given the NMMSS' other data limitations, the United States relies on other sources to obtain information on nuclear materials of both U.S. and foreign origin that are located in foreign countries. For example, the United States has relied on DOE and other agencies to help determine the quantity, location,

[11]External impact occurs when a system requires input from, or output to, one or more organizations (such as NRC-licensed facilities) besides the one responsible for its implementation.

origin, and characteristics of commercial plutonium in noncommunist countries. DOE also uses data provided by intelligence sources and technology to support nuclear materials nonproliferation programs.

We did not assess the reliability of these information sources. However, according to the recent Rand study performed for the Under Secretary of the Department of Defense, no intelligence community can know of all of the major nuclear facilities and activities in certain countries.[12] For example, according to an official from the Arms Control and Disarmament Agency, U.S. intelligence sources lacked reliable information on North Korea and Iraq. The Director of DOE's International Safeguards Division told us that the need for an international nuclear materials tracking system is clear and that if the U.S. system for tracking materials had been more effective, the United States might have known more about Iraq's nuclear program before Desert Storm. DOE has initiated efforts to improve the United States' ability to track nuclear materials internationally. We are reporting to you classified information on these efforts and their limitations separately.

Physical Protection of Exported U.S.-Supplied Nuclear Materials Requires Foreign Countries' Cooperation

To ensure the physical protection of exported U.S.-supplied civilian-use nuclear materials, the United States relies on the protection systems in recipient countries, these countries' compliance with IAEA's guidelines, and U.S. evaluations of the adequacy of their physical protection systems (e.g., security devices and guards, etc.). Once the United States exports nuclear materials, it is the responsibility of the recipient country to adequately protect them. While no international organization is responsible for establishing or enforcing physical protection standards, IAEA has developed guidelines that are broadly supported by its member states. These guidelines include protection measures such as the use of physical barriers along the perimeters of protected areas. The United States uses these guidelines to help evaluate whether foreign countries' physical protection systems are adequate. As a result of these evaluations, the United States may make nonbinding physical protection recommendations.

The international community, including the United States, has supported states' sovereign rights and responsibilities to establish and operate physical protection systems for nuclear materials and facilities. It is also in the best interest of the sovereign states to ensure the physical protection

[12]Limiting the Spread of Weapon-Usable Fissile Materials, Rand National Defense Research Institute, 1993.

of these materials to reduce the threat of theft or diversion. Concerns have been expressed about the physical protection of U.S.-supplied nuclear materials at the High Flux Petten Reactor in the Netherlands. Reportedly, Dutch Marines staged a mock attack on the facility and gained access to its HEU. During this review, we visited the High Flux Petten Reactor and met with Dutch officials, who confirmed that this incident, which was intended to test the facility's physical security system, did occur. These officials also noted that physical security at the reactor has improved since the incident took place.

Although the ultimate responsibility for the protection of nuclear materials resides with the sovereign state, according to IAEA the protection of these materials is a matter of international concern and cooperation. Nevertheless, no international organization is currently responsible for establishing physical protection standards or ensuring that nuclear materials are adequately protected from unauthorized removal and that facilities are protected from sabotage. However, beginning in 1972, IAEA convened international experts to establish and subsequently revise guidelines on the physical protection of civilian-use nuclear materials. These guidelines represent a broad consensus among IAEA's member states on the requirements for physically protecting nuclear materials and facilities. IAEA also assists states that request guidance on physical protection by providing international physical protection experts as consultants. The United States supports these assistance efforts and provides experts when requested.

The United States also evaluates foreign countries' physical protection systems under the U.S. Bilateral Physical Protection Program. According to DOE, the primary objective of this program is to fulfill U.S. statutory obligations under the Atomic Energy Act of 1954, as amended by the Nuclear Non-Proliferation Act of 1978, and the provisions of specific U.S. agreements for cooperation. These obligations require that the United States ensure that U.S.-supplied nuclear materials are subject to a level of physical protection that meets or exceeds IAEA's guidelines. In addition, other objectives of this program are to (1) address emerging nuclear proliferation threats and problems, (2) promote technical exchanges and cooperation for physical protection, and (3) strengthen international cooperation and the implementation of treaties and agreements.

According to DOE, the countries participating in the U.S. Bilateral Physical Protection Program do so principally because they have or expect to have

- an agreement for peaceful nuclear cooperation with the United States, or a trilateral supply arrangement with IAEA and the United States;
- U.S.-supplied nuclear materials;
- category I quantities of nuclear materials;[13] and/or
- a pending U.S. nuclear export or supply arrangement.

U.S. teams are led by a DOE representative and usually include officials from other agencies.[14] The teams visit a variety of nuclear facilities, including research reactors, fuel cycle facilities, and nuclear power reactors. According to an NRC official, these visits have also been an important source of information when NRC assesses a country's physical protection system as part of the process of reviewing export license applications.

Since 1974, the United States has conducted bilateral consultations with approximately 46 nations, including site visits to review the physical protection of nuclear materials at fixed sites and during transport. (App. II identifies the countries that U.S. officials have visited.) More recently, program officials have started to explore possible technical cooperation and information exchanges with the newly formed states of the former Soviet Union and Eastern Europe.

According to DOE, the U.S. site visit teams will make nonbinding recommendations for improvements to physical protection when such improvements are needed. In cases in which countries have been revisited, efforts are made to follow up on the previous team's recommendations. However, according to a DOE official, DOE does not have a mechanism to follow up on previous recommendations in between visits and has not always monitored the status of the sites visited. He said that a mechanism to follow up on recommendations in between visits is important, since some countries may not be revisited for 4 to 5 years.

Conclusions

DOE's NMMSS has significant limitations in its ability to track nuclear materials internationally; these limitations will continue under DOE's new NMMSS. In particular, the new NMMSS will not overcome previously existing nuclear materials tracking limitations that are often caused by

[13]Category I nuclear materials represent certain types of unirradiated plutonium (2 kilograms or more), uranium-235 (5 kilograms or more), and uranium-233 (2 kilograms or more).

[14]This program is an interagency executive branch program implemented by the Departments of State, Energy, and Defense with the participation of the NRC and the Arms Control and Disarmament Agency.

non-system-related problems; for example, the system does not contain data that are not required to be reported under the U.S. agreements for cooperation. We believe DOE should have explored systems alternatives and queried its intended users to attempt to mitigate some of these limitations. In addition, because DOE has not followed good systems development practices, DOE cannot ensure that the system will be cost-effective or will even fulfill the needs of its major users.

Recommendation

Before investing further resources in the new NMMSS, we recommend that the Secretary of Energy direct the Office of Arms Control and Nonproliferation to determine users' requirements, investigate alternatives, conduct cost-benefit analyses, and develop a plan to meet any identified needs, either through enhancing the new NMMSS or designing a different system.

Agency Comments and GAO's Response

We discussed the contents of this report with the Director of DOE's Office of Export Controls and International Safeguards, officials in the State Department's Office of Nuclear Energy Affairs, and the Director of NRC's Division of Nonproliferation, Exports, and Multilateral Relations. However, as requested, we did not obtain written agency comments on a draft of this report. The DOE, State Department, and NRC officials that we spoke with generally agreed with the facts presented. DOE also provided the following comments, which we evaluated.

DOE officials commented that the NMMSS' size and complexity and its role in meeting U.S. treaty and statutory obligations led DOE to focus initially on duplicating NMMSS' functions and not on upgrading the system; such an upgrade will be considered after the duplication effort has been successfully accomplished. We believe that the size and complexity of the NMMSS and its pivotal role in meeting U.S. treaty and statutory obligations should have compelled DOE to ensure that the system was planned and designed properly. As we point out in the report, DOE's decision to duplicate the existing NMMSS' functionality led to a system that may not meet users' needs and that perpetuates the existing system's weaknesses. Furthermore, program modifications to upgrade systems at a later time are typically more costly and more risky than initially programming the system to meet users' needs.

Our work was performed between October 1993 and November 1994, in accordance with generally accepted government auditing standards. Appendix III describes the scope and methodology of our review.

As agreed with your offices, unless you publicly announce its contents earlier, we plan no further distribution of this report until 30 days from the date of this letter. At that time, we will send copies of the report to appropriate congressional committees; the Secretaries of Energy and State; and the Chairman, Nuclear Regulatory Commission. We will make copies available to others upon request.

Please call us at (202) 512-3841 and (202) 512-6222, respectively, if you or your staff have any questions. Major contributors to this report are listed in appendix IV.

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Appendix I

Nuclear Materials Export Processes

The United States regulates its exports of U.S.-supplied nuclear materials to countries with U.S. agreements for cooperation through the implementation of the U.S. nuclear materials export license process. The Nuclear Regulatory Commission (NRC) is responsible for issuing export licenses for nuclear materials. In accordance with the Nuclear Nonproliferation Act of 1978 and the Department of Energy's (DOE) regulations, the executive branch agencies (DOE, the Departments of Commerce, Defense, and State and the Arms Control and Disarmament Agency), led by the Department of State, assist NRC in reviewing export license applications in certain cases. NRC generally grants export licenses if the following criteria are met:

- The International Atomic Energy Agency's (IAEA) safeguards will be applied pursuant to the Treaty on the Nonproliferation of Nuclear Weapons[15] and the Treaty of Tlatelolco.[16]
- No material will be used for a nuclear explosive device or for research on or the development of a nuclear explosive.
- Adequate physical protection measures will be maintained for facilities and materials.
- No material will be retransferred[17] without U.S. consent.
- The exported material will not seriously prejudice U.S. nonproliferation objectives or jeopardize the common defense and security.
- No material will be reprocessed or altered in form or content without previous approval from the United States.
- Material will be under the terms of the agreement for cooperation.

As figure I.1 outlines, to apply for a license to export special nuclear materials, an application must be submitted to NRC. NRC checks the application for completeness and accuracy and determines if an executive branch review (DOE, the Departments of Commerce, Defense, and State and the Arms Control and Disarmament Agency) is required. Executive branch reviews are necessary if, among other things, the export is (1) more than 1 effective kilogram of highly enriched uranium or 10 grams of plutonium or U-233 or (2) if source materials (uranium, thorium, or any

[15]Under the Treaty on the Non-Proliferation of Nuclear Weapons, signatory nonnuclear-weapons states that had not manufactured or detonated a nuclear device before January 1, 1967, agree not to acquire nuclear weapons and to accept IAEA's safeguards on all source and special nuclear materials in peaceful nuclear activities.

[16]The Treaty of Tlatelolco prohibits nuclear weapons in signatory Latin American countries and requires commitments to IAEA's safeguards.

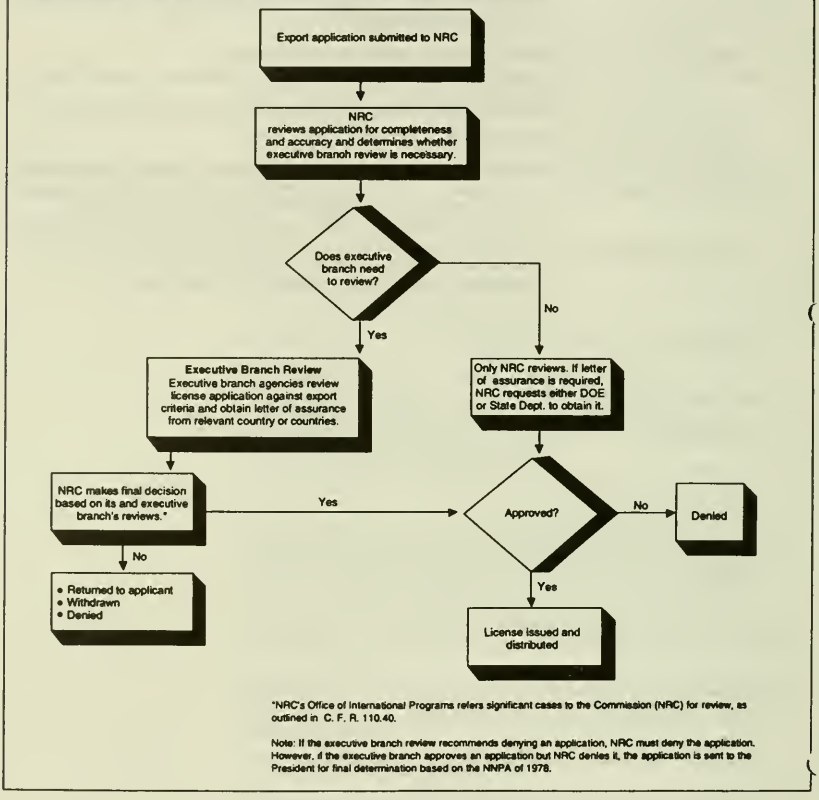
[17]A retransfer is the transport from one foreign country to another of nuclear materials previously exported from the United States or the materials produced through the use of nuclear materials previously exported by the United States.

ores containing uranium or thorium) or special nuclear materials are to be exported under the U.S.-IAEA Agreement for Cooperation. The executive branch review determines if

- the export request meets U.S. export criteria;
- the proposed export would not be inimical to the common defense and security of the United States; and
- where available, the exported materials would be under the terms of an agreement for cooperation.

NRC may request the executive branch to address specific concerns and to provide additional data and recommendations. If the executive branch and NRC determine that the request satisfies the above criteria, NRC will approve the export license. The export license establishes the amount of material that the applicant may export and the time frame in which that amount may be exported. The applicant may make multiple shipments of the material to reach the specified amount on the license.

Figure I.1: Interagency Review of Applications for Nuclear Materials Export Licenses



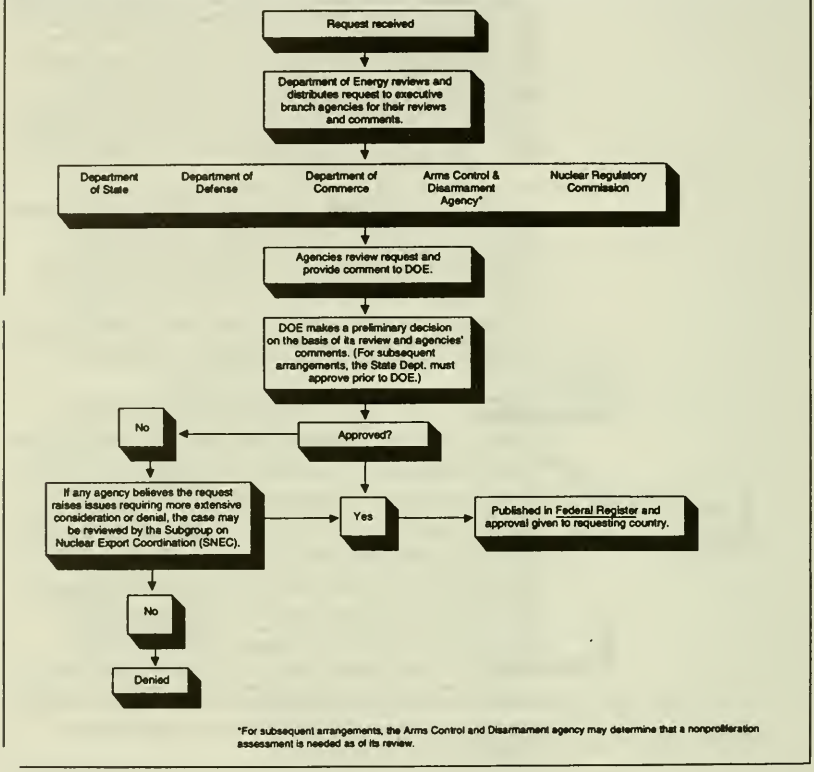
In 1993, the United States received 89 export license applications for nuclear materials (source, special nuclear material, and by-product[18]) of which 71 were issued in 1993 and 11 were subsequently issued by May 5, 1994. Of the remaining six applications, five are pending and one was withdrawn by the applicant country as of May 5, 1994. According to an NRC official, of the five pending applications, the United States is awaiting letters of assurance, as required, from the applicants before making a decision. A letter of assurance is a statement from the government of the recipient country that the nuclear materials will be handled in accordance with the terms set forth in the relevant U.S. agreement for cooperation.

Once nuclear materials are exported from the United States, they are subject to the controls contained in cooperative arrangements established in the terms of U.S. agreements for cooperation. The subsequent arrangements and retransfer process are regulatory controls used to control the supply, use, or retransfer of exported U.S.-supplied nuclear materials and equipment. Activities that can be subject to subsequent arrangements are the reprocessing of spent fuel or the retransfer of nuclear materials to a third country. Generally, these requirements enable the United States to determine that the arrangement or retransfer will not be inimical to the common defense and security of the United States.

As figure I.2 outlines, DOE is generally the lead agency for processing subsequent arrangements and retransfer requests and coordinating the interagency review required for these requests. These interagency reviews provide the Departments of Commerce, Defense, and State and the Arms Control and Disarmament Agency and NRC the opportunity to review the request. For subsequent arrangements, the State Department must approve the arrangement in order for it to proceed, and the Arms Control and Disarmament Agency must determine whether or not the arrangement requires a nonproliferation assessment statement. After the interagency review, DOE will make a determination on the basis of its and the participating executive agencies' views. If, during the interagency review, any agency believes the request raises issues requiring more extensive consideration or denial, the request may be submitted for further discussion and concurrence to the Subgroup on Nuclear Export Coordination. This interagency group examines dual-use export issues, retransfers, and related matters to determine that the proposed activity is consistent with U.S. foreign policy, national security, and nonproliferation objectives and that commercial and economic considerations can be established.

[18]A by-product material means any radioactive material (except special nuclear material) yielded in or made radioactive by exposure to radiation in the process of producing or utilizing special nuclear materials.

Figure I.2: DOE's Subsequent Arrangement and Retransfer Review Process



Appendix II

U.S. Bilateral Physical Protection Visits (1974-94)

Country	Number of visits	Date of last visit
Argentina	3	1990
Australia	3	1991
Austria	2	1989
Belgium	3	1988
Brazil	2	1990
Bulgaria	1	1993
Canada	3	1989
Columbia	2	1994
Czechoslovakia	1	1992
Denmark	4	1990
Finland	1	1976
France	5	1992
Germany	4	1992
Greece	3	1993
Hungary	1	19[illegible]
India	1	1975
Indonesia	2	1991
Ireland	1	1976
Israel	1	1976
Italy	4	1988
Japan	6	1992
Luxembourg	1	1976
Malaysia	1	1977
Mexico	2	1990
Morocco	1	1993
Netherlands	4	1990
Norway	2	1984
Pakistan	1	1975
Paraguay	1	1977
Peru	2	1994
Philippines	2	1976
Portugal	2	1988
Rep. of Korea	3	1992
Romania	4	1993
Slovenia	1	1993
South Africa	2	1992
Spain	3	19[illegible]
Sweden	5	1990

(continued)

Country	Number of visits	Date of last visit
Switzerland	6	1993
Thailand	2	1977
Taiwan	1	1975
Turkey	1	1975
United Kingdom	3	1991
Uruguay	1	1977
Venezuela	1	1977
Yugoslavia	2	1989

Source: DOE.

Appendix III

Scope and Methodology

To determine the tracking limitations of DOE's Nuclear Materials Management and Safeguards System (NMMSS), we reviewed reports by NRC and DOE consultants and the U.S. agreements for cooperation. We also examined the NMMSS' documentation and other documents pertaining to the system and interviewed DOE, NRC, and Martin Marietta officials. While we did not interview a statistical representation of NMMSS users, we did interview members of the NMMSS Steering Committee and other major users to obtain their views on the accuracy and completeness of the NMMSS' data.

To assess DOE's new NMMSS, we interviewed DOE, Livermore, and Argonne National Laboratory program officials, NMMSS Steering Committee members, and other NMMSS users. We also reviewed the new NMMSS' planning documentation. We also spoke with officials with Livermore's subcontractor, reviewed the subcontracts, and reviewed the subcontractor's technical and cost proposals. In addition, we interviewed officials from the State Department, the Arms Control and Disarmament Agency, the Central Intelligence Agency, DOE's Pacific Northwest Laboratory, and the Department of Defense to determine whether other tracking systems exist.

To determine the U.S. process for evaluating the physical protection of foreign facilities, we interviewed officials from DOE, NRC, and the State Department. In addition, we also reviewed program documentation, including the results of U.S. site visits.

To understand the export license and subsequent arrangement process, we reviewed 10 C.F.R. Part 110 and interviewed DOE and NRC officials.

We performed our review primarily at DOE's headquarters at Washington, D.C., and Germantown, Maryland, locations; DOE's Lawrence Livermore National Laboratory, Livermore, California; Oak Ridge Operations Office and Y-12 Plant in Oak Ridge, Tennessee; Pacific Northwest Laboratory in Richland, Washington; and NRC's headquarters in Rockville, Maryland. We also visited the High Flux Petten Reactor in the Netherlands.

22-883 96 – 4

Appendix IV

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United States General Accounting Office

GAO

Report to the Committee on Governmental Affairs, U.S. Senate

June 1995

NUCLEAR NONPROLIFERATION

Information on Nuclear Exports Controlled by U.S.-EURATOM Agreement

GAO/RCED-95-168

GAO

United States
General Accounting Office
Washington, D.C. 20548

Resources, Community, and
Economic Development Division

B-261275

June 16, 1995

The Honorable William V. Roth, Jr.
Chairman
The Honorable John Glenn
Ranking Minority Member
Committee on Governmental Affairs
United States Senate

The Agreement for Cooperation Between the United States of America and the European Atomic Energy Community Concerning Peaceful Uses of Atomic Energy (U.S.-EURATOM agreement) expires on December 31, 1995. The U.S.-EURATOM agreement controls the exports of certain nuclear materials—specifically, enriched uranium, natural and depleted uranium with specific nuclear uses, plutonium, thorium, and nuclear reactors and their major components and parts—between the United States and 15 western European countries.[1] If a new agreement is not concluded before the expiration date, the export of these U.S. nuclear materials and components to EURATOM would be prohibited. In addition, the expiration of the U.S.-EURATOM agreement would also prohibit Japan from transferring U.S.-origin nuclear materials to EURATOM because U.S.-origin nuclear materials cannot be transferred to countries that do not have in place an agreement for cooperation with the United States.

This report responds to your request for information on (1) the amount of U.S. nuclear exports to EURATOM and Japan and U.S.-origin nuclear materials transferred from Japan to EURATOM, (2) the value of U.S. nuclear exports to EURATOM and Japan, and (3) the nuclear industry's views on the potential impact on nuclear commerce with EURATOM and Japan if the U.S.-EURATOM agreement is not renewed.

Results in Brief

From 1980 through 1994, the United States exported about 32.5 million kilograms (kgs) and about 11 million kgs of nuclear materials to EURATOM and Japan, respectively, and Japan transferred about 4.7 million kgs of U.S.-origin nuclear materials to EURATOM. Depleted, natural, and enriched uranium constituted the largest amounts of nuclear materials exported to EURATOM and Japan. Depleted uranium is very dense and can be used in

[1]EURATOM is composed of 15 countries: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden, and the United Kingdom. These countries are treated as a single entity for the purposes of trade in and the transfer of nuclear materials to the United States. Because Austria, Finland, and Sweden joined EURATOM in 1995, they are not included in the data on nuclear exports presented in this report.

high-impact projectiles and as a shielding material against radiation. Both natural and enriched uranium are used for fuel in nuclear power reactors. Enriched uranium constituted the largest amount—totaling about 4.5 million kgs—of U.S.-origin nuclear material transferred from Japan to EURATOM during 1980 through 1994. Japan also transferred a total of 37,187 kgs of U.S.-origin plutonium to EURATOM during this period. According to a Nuclear Regulatory Commission (NRC) official, no nuclear power reactors were exported to EURATOM or Japan from 1980 through 1994. However, NRC issued licenses for the export of four major reactor components for use in research and nuclear power reactors to EURATOM in 1986, 1991, and 1992. The United States has also exported nuclear reactor equipment and components to Japan annually from 1980 through 1994 under NRC's general licenses.

The U.S. Department of Commerce has valued U.S. nuclear materials exported from 1989 through August 1994 at about $1.1 billion for EURATOM countries and about $4 billion for Japan. For fiscal years 1989 through 1993, the value of U.S. enrichment services charged to EURATOM and Japan was $168 million and $1.6 billion, respectively. According to U.S. nuclear industry officials, technical and engineering services related to exported nuclear materials, such as uranium mining, enrichment, and fuel fabrication, should be factored into the value of U.S. nuclear exports.

According to United States Enrichment Corporation officials, if the U.S.-EURATOM agreement expires, the future of the Corporation's uranium enrichment services could be seriously affected. Corporation officials estimated that contracts with EURATOM worth approximately $160 million would terminate and that other contracts worth about $470 million would be in jeopardy if the agreement expires. Furthermore, another $1.8 billion in potential new contracts with EURATOM and Japan could be lost.

Background

EURATOM, a group of 15 western European countries in the European Union, was established in 1957 to promote and facilitate the growth of nuclear industries through the research and development of nuclear energy in the Union, to ensure a supply of nuclear materials, and to foster progress in the peaceful uses of nuclear energy. Figure 1 shows EURATOM's 15 member countries.

Figure 1: Map of EURATOM Member Countries

The U.S.-EURATOM agreement was signed in 1958. According to a State Department official, the agreement has served as the basis for substantial and historic peaceful nuclear cooperation and trade between the United States and the EURATOM countries for nearly 40 years. Negotiations are currently under way to try to secure a new U.S.-EURATOM agreement before the present agreement expires at the end of 1995. According to a State Department official, if a new agreement is not concluded prior to the expiration date, significant nuclear commerce between the two parties must be suspended. According to a Department of Energy (DOE) official, the existing U.S.-EURATOM agreement prohibits the EURATOM countries from using U.S.-origin nuclear materials or equipment for nuclear weapons or for other military purposes, and it requires that EURATOM safeguards or controls be applied to U.S.-origin materials in a EURATOM country. These safeguards are augmented by full-scope International Atomic Energy Agency safeguards in the EURATOM states that do not have nuclear weapons. The EURATOM nations are required to obtain U.S. consent before transferring U.S.-origin nuclear materials or equipment to a third party outside of the European Union. However, the agreement does not contain any other U.S. consent rights and therefore differs significantly from other U.S. nuclear cooperation agreements, which contain U.S. consent rights over the use (including reprocessing) of U.S.-origin nuclear materials.

Quantities of U.S. Nuclear Materials Exported to EURATOM and Japan From 1980-94

The largest amount of U.S. nuclear materials exported to EURATOM and Japan during the last 15 years was made up of depleted, natural, and enriched uranium. Table 1 shows the total amount of U.S. nuclear materials exported to EURATOM from 1980 through 1994 that are controlled by the agreement. Table 2 summarizes the total amount of nuclear materials exported to Japan during the same period. (App. I contains detailed information on U.S. exports to EURATOM and Japan.)

Table 1: Summary of U.S. Nuclear Materials Exported to EURATOM, 1980-94

In kilograms

Nuclear material	Quantity
Depleted uranium	14,649,985.000
Natural uranium	11,886,101.000
Enriched uranium	6,049,307.000
Thorium	3,188.000
Uranium-233	0.062
Plutonium	32.800
Plutonium-242	0.09
Plutonium-238	0.09

Table 2: Summary of U.S. Nuclear Materials Exported to Japan, 1980-94

In kilograms

Nuclear material	Quantity
Enriched uranium	10,031,810.000
Natural uranium	917,621.000
Depleted uranium	7,937.000
Thorium	2,705.000
Uranium-233	0.056
Plutonium	2.420
Plutonium-242	0.007
Plutonium-238	0.019

Quantities of U.S.-Origin Nuclear Materials Transferred From Japan to EURATOM From 1980-94

Japan uses enriched and natural uranium as fuel for nuclear power reactors. The used or spent fuel is transferred to EURATOM for reprocessing, which chemically separates the depleted uranium and plutonium. Enriched uranium, totaling 4,542,383 kgs, constituted the largest amount of U.S.-origin nuclear materials transferred from Japan to EURATOM. From 1980 through 1994, Japan transferred to EURATOM between 115,651 kgs and 404,935 kgs annually of enriched uranium. Japan also exported about 37,187 kgs of plutonium to EURATOM during this period. Table 3 summarizes the total amount of U.S.-origin nuclear materials Japan transferred to EURATOM during the period. (App. I contains information on the amount of U.S.-origin nuclear materials Japan transferred to EURATOM annually during this period.)

Table 3: Summary of U.S.-Origin Nuclear Materials Transferred From Japan to EURATOM, 1980-94

In kilograms

Nuclear material	Quantity
Enriched uranium	4,542,383.000
Depleted uranium	98,178.000
Plutonium	37,187.000

Exports of Reactors and Reactor Components

According to NRC officials, no nuclear power reactors were exported to EURATOM or Japan from 1980 through 1994. However, NRC issued licenses for the export of four major reactor components for use in research and nuclear power reactors to EURATOM in 1986, 1991, and 1992. In addition, nuclear reactor equipment and components have been exported by the United States to Japan annually between 1980 and 1994 under NRC's general licenses.

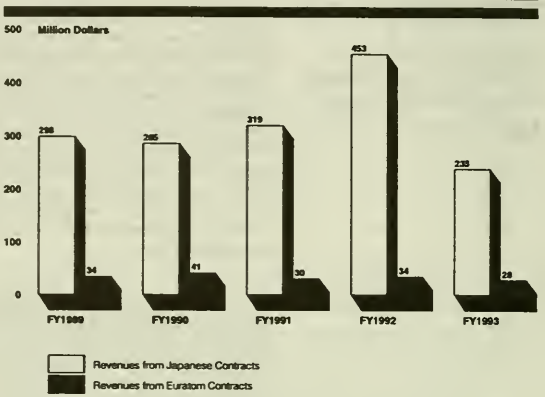
Dollar Value of U.S. Nuclear Exports to EURATOM and Japan From 1989 Through August 1994

We obtained the dollar values of the uranium and plutonium exports from the Department of Commerce's National Trade Data Base. However, this data base excludes the cost of loading the merchandise aboard the exporting carrier and also excludes freight, insurance, and any other charges or transportation costs beyond the port of exportation. The reliability of the data also depends on the accuracy of reporting by shippers on their export declarations. According to the Department of Commerce's data base, the dollar value of U.S. exports to EURATOM countries of uranium (natural, enriched, and depleted) and plutonium in 1989 through August 1994 was about $1.1 billion. The value of these U.S. exports to Japan for the same period was about $4 billion. (App. II contains detailed information on the dollar value of U.S. exports to EURATOM and Japan.)

U.S. Uranium Enrichment Services

According to U.S. nuclear industry officials, the services related to exported nuclear materials, such as uranium mining, enrichment, and fuel fabrication, should be factored into the value of U.S. nuclear exports. In the past, DOE provided uranium enrichment services to EURATOM and Japan. In 1993, uranium enrichment services were transferred to the U.S. Enrichment Corporation (USEC), a government-owned corporation, which was created to operate the U.S.-owned uranium enrichment plants and to market enrichment services. We contacted DOE and USEC to obtain the amount billed to EURATOM and Japan for enrichment services from 1989 through 1994. According to information from DOE, EURATOM was billed a total of $167,527,507 for enrichment services in fiscal years 1989 through 1993. Japan was billed a total of $1,593,567,205 for the same period. DOE's billings under EURATOM and Japanese contracts, by fiscal year (FY), are shown in figure 2.

Figure 2: DOE's Revenuee for Uranium Enrichment Services for FYs 1989-93



Note: DOE's uranium enrichment services were transferred to USEC after FY 1993.

Source: DOE's Oak Ridge Operations Office.

The amounts billed by DOE included the cost of enriching the uranium delivered to the enrichment plant and of packaging and handling the services at the enrichment plant. The enriched uranium is delivered to the customer at the enrichment plant, but its cost does not include any subsequent services, such as fabricating reactor fuel assemblies. According to USEC, the amount billed under Japanese contracts for the period from 1989 through 1994 was $350 million to $400 million per year.

U.S. Nuclear Industry's Views on Potential Impact of Nonrenewal of Agreement on Nuclear Commerce With EURATOM and Japan

Industry representatives anticipate that if the U.S.-EURATOM agreement is allowed to expire, EURATOM and Japan would turn to other suppliers of nuclear products and services outside the United States. U.S. participation in the European nuclear markets would be greatly reduced. In addition, because Japan also exports U.S.-origin spent fuel to EURATOM for reprocessing, Japan would be less likely to purchase uranium fuel sources from the United States in the future. The absence of a U.S.-EURATOM agreement would prohibit Japan from transferring this U.S.-origin spent fuel for reprocessing in any EURATOM country.

Furthermore, these industry representatives point out that part of nuclear commerce includes relationships with the customers and the guarantee of reliable supply and services to them. A break in any of these ties, such as a failure to renew the U.S.-EURATOM agreement, would weaken the U.S. nuclear industry substantially, because the industry needs both its domestic and foreign markets. U.S. nuclear industry representatives stated that the nuclear industry is a market industry that can exist only in a global environment.

According to USEC officials, if the U.S.-EURATOM agreement for cooperation expires, USEC's future enrichment services would be seriously affected. Specifically, existing contracts with EURATOM, worth approximately $160 million, could be terminated. Other contracts, valued at approximately $470 million, would be in jeopardy. Another $1.8 billion in potential new business from EURATOM and Japan might be lost. According to a nuclear industry representative, the U.S. share of the European nuclear industry market currently is about $100 million and may reach $300 million annually after the year 2000. In addition, Japan currently is the largest single foreign purchaser from U.S. suppliers of nuclear power systems equipment, materials, and services. In the next 5 years, according to industry officials, anticipated U.S. participation in construction, equipment, start-up services, spare parts, and fuel for 10 nuclear power plants in Japan is expected to amount to about $500 million to $800 million annually throughout the plants' lives.

Agency Comments

During May 1995, we provided drafts of this report to officials in NRC and the Departments of Commerce, Energy, and State to obtain their comments on the facts presented in this report. In general, these officials agreed with the facts presented in the draft report. NRC officials, including the Director, Division of Nonproliferation, Exports, and Multilateral Relations, Office of International Programs, made several editorial

suggestions to improve the clarity of the information and noted that they had some questions about the Department of Commerce's National Trade Data Bank information presented in table II.8 in appendix II. In particular, NRC officials stated that they were puzzled by the reported plutonium sales to some of the listed countries, especially Denmark, Greece, and Portugal. According to the NRC officials, these countries have very small nuclear research programs and no nuclear power programs; thus, they doubt that these countries have in fact imported plutonium from the United States. In addition, NRC stated that NRC's export licensing data base shows no licenses for exports to Greece or Portugal, one small (0.005 kg) plutonium export case for Denmark, and only three plutonium export cases for Spain. However, NRC noted that U.S.-supplied nuclear materials to any country within EURATOM can be freely transferred within EURATOM without prior notification to, or approval by, the United States. Thus, according to NRC, it is possible, although not considered likely, that U.S.-supplied plutonium has gone to the countries in question and has been reported to the Department of Commerce's National Trade Data Bank system without appearing in NRC's export licensing records. (The text of NRC's comments appears in app. III.)

In their review of the draft, Department of Commerce officials, including officials at the Bureau of Export Administration, acknowledged the differences in NRC's export licensing data base, DOE's data base, and the National Trade Data Bank's data. However, neither the Department of Commerce nor DOE has determined why these data bases differ. According to the Department of Commerce officials, they may, at a later date, examine why these differences exist. According to a DOE official, DOE is attempting to determine why the differences exist between the data bases. It was not within the scope of our review to determine why the various data bases differ. (The text of the Department of Commerce's comments appears in app. IV.)

DOE officials, including the Acting Director, Office of Nonproliferation and National Security, reviewed the draft and had no comments on the facts presented. DOE stated that it is confident that a new U.S.-EURATOM agreement will be achieved before the December 31, 1995, expiration of the current agreement. (The text of the Department of Energy's comments appears in app. V.) The State Department's Foreign Affairs Officer, Office of Nuclear Energy Affairs, Bureau of Political-Military Affairs, reviewed the draft and had no comments on the facts presented in the report. (The text of the Department of State's comments appears in app. VI.)

Scope and Methodology

To determine what nuclear commerce items are subject to export controls under the U.S.-EURATOM agreement, we interviewed officials in NRC's Office of International Programs, Division of Nonproliferation, Exports, and Multilateral Relations. We reviewed the export license requirements covered by 10 C.F.R. part 110. In addition, we obtained data on NRC's approved licenses for U.S. nuclear material exports to EURATOM and Japan for 1980 through 1994 (the period selected was judgmental) from NRC's Office of International Programs, Division of Nonproliferation, Exports, and Multilateral Relations.

To determine what data bases contain data on nuclear material exports, we interviewed officials at DOE's Energy Information Administration (EIA); the Program Manager for DOE's Nuclear Materials Management and Safeguards System (NMMSS), and NMMSS officials at the Oak Ridge Operations Office in Oak Ridge, Tennessee; officials at the Customs EXODUS Command Center; NRC officials in the Office of International Programs, Division of Nonproliferation, Exports, and Multilateral Relations; and U.S. nuclear industry representatives, including the Nuclear Energy Institute, General Electric, Energy Resources International, Inc., and Edlow International, Inc. On the basis of these discussions, we found that the best data available on U.S. nuclear exports are contained in the NMMSS data base, which accounts for U.S. nuclear material exports controlled under the U.S.-EURATOM agreement. The information on exported nuclear materials and U.S.-origin materials transferred from Japan to EURATOM in the NMMSS data base is collected from DOE and NRC forms. These forms are filled out by parties involved in the shipment of these materials. According to an NMMSS official, the data in the NMMSS data base reflect the amounts of nuclear materials that were actually exported or transferred from one country to another country.

To obtain the DOE/NMMSS export information, we worked with DOE/NMMSS staff at the Oak Ridge Operations Office in Oak Ridge, Tennessee, and NRC officials in the Office of International Programs, Division of Nonproliferation, Exports, and Multilateral Relations. However, we did not independently verify the accuracy of these data.

To determine the dollar value of uranium and plutonium exports to EURATOM countries and Japan, we obtained available data (1989-Aug. 1994) from the Department of Commerce's National Trade Data Bank. The accuracy of these data depends largely on the accuracy of the reporting by shippers in their export declarations. We did not independently verify the accuracy and completeness of the data. We

recognize that DOE's and the Department of Commerce's data show different quantities of nuclear material exports. Both DOE and Department of Commerce officials also acknowledge the differences in these data. However, it was not within the scope of this review to determine why the various data bases differ. According to a DOE official, DOE is attempting to determine why the two data bases differ. According to Department of Commerce officials, they may, at a later date, examine why these differences exist.

We interviewed nuclear industry officials, NRC officials, DOE/NMMSS staff, EIA officials, and officials from the State Department to obtain information on the nuclear commerce subject to the U.S.-EURATOM agreement. We also interviewed USEC officials to obtain available data (FYs 1989-93) on the value of enrichment services provided by DOE and USEC.

Our work was performed between September 1994 and May 1995 in accordance with generally accepted government auditing standards.

As arranged with your offices, unless you publicly announce its contents earlier, we plan no further distribution of this report until 15 days from the date of this letter. At that time, we will send copies to the Secretaries of Commerce, Energy, and State and to the Chairman, Nuclear Regulatory Commission. We will make copies available to others on request.

Please call me at (202) 512-3841 if you or your staff have any questions. Major contributors to this report are listed in appendix VI.

Victor S. Rezendes
Director, Energy and
Science Issues

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Abbreviations

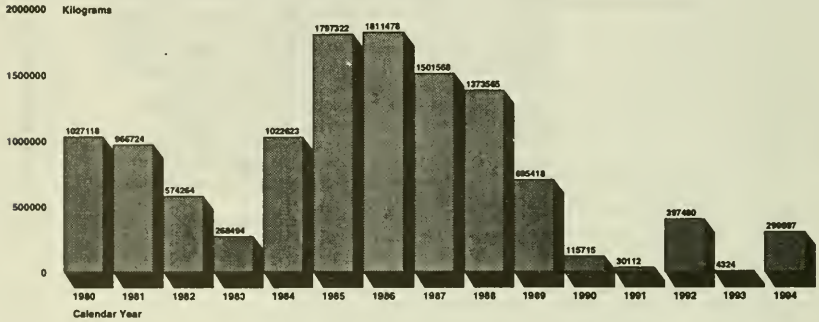
DOE	Department of Energy
EIA	Energy Information Administration
EURATOM	European Atomic Energy Community
FY	fiscal year
HEU	highly enriched uranium
kgs	kilograms
LEU	low-enriched uranium
NMMSS	Nuclear Materials Management and Safeguards System
NRC	Nuclear Regulatory Commission
USEC	United States Enrichment Corporation

Appendix I

U.S. Nuclear Material Exports to EURATOM and Japan

U.S. Exports to EURATOM

Figure I.1: U.S. Exports to EURATOM—Natural Uranium, 1980-94



Note: Nuclear Materials Management and Safeguards System's (NMMSS) data are expressed by element weight.

Source: NMMSS, Department of Energy (DOE)

Figure I.1 shows that U.S. exports of natural uranium to EURATOM ranged from 4,324 kilograms (kgs) to 1,811,478 kgs annually during 1980 through 1994. The total amount of natural uranium exported was 11,886,101 kgs during this period. Natural uranium is used for fuel in some nuclear power reactors, but it is usually enriched or used for blending to produce low-enriched fuel.

Figure I.2: U.S. Exports to EURATOM—Enriched Uranium, 1980-94

Notes:
1. Enriched uranium contains U-235.
2. NMMSS' data are expressed by element weight

Source: NMMSS, DOE.

Figure I.2 shows that U.S. exports of enriched uranium to EURATOM ranged from 197,186 kgs to 615,415 kgs annually during 1980 through 1994. The total amount of enriched uranium exported was 6,049,307 kgs during this period. Enriched uranium contains 0.711 percent of the isotope uranium-235. Examples of enriched uranium's typical uses include fuel for commercial power reactors (low-enriched uranium) and research reactor fuel (highly enriched uranium).

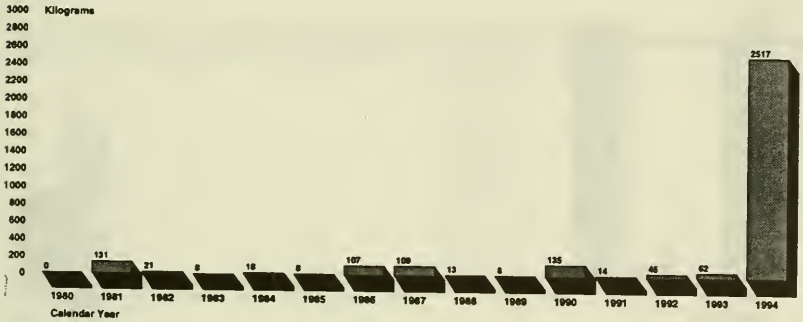
Figure I.3: U.S. Exports to EURATOM—Depleted Uranium, 1980-94

Note: Depleted uranium contains U-235.

Source: NMMSS, DOE.

Figure I.3 shows that U.S. exports to EURATOM of depleted uranium, with nuclear end use, ranged from 3,086 kgs to 10,286,236 kgs annually during 1980 through 1994. A total of 14,649,985 kgs were exported during this period. Depleted uranium also contains uranium-235 but contains less than 0.711 percent of this isotope. Depleted uranium is very dense and can be used in high-impact projectiles and as a shielding material against radiation.

Figure I.4: U.S. Exports to EURATOM—Thorium, 1980-94



Note: NMMSS' data are expressed by element weight.

Source: NMMSS, DOE.

Figure I.4 shows that U.S. exports of thorium to EURATOM ranged from 0 to 2,517 kgs annually during 1980 through 1994. A total of 3,188 kgs of thorium were exported during this period. According to a DOE official, thorium is used for research and development purposes.

Figure I.5: U.S. Exports to EURATOM—Uranium-233, 1980-94

Notes:
1. NMMSS' data are expressed by element weight.
2. Uranium-233 is stated in grams because the quantities are too small to be expressed in kilograms.

Source: NMMSS, DOE.

Figure I.5 shows that U.S. exports of uranium-233 to EURATOM ranged from 0 to 26 grams annually during 1980 through 1994. A total of 62 grams of uranium-233 were exported during this period. According to the NRC, this uranium-233 was for use as standard samples in laboratory analyses and tests.

U.S. Exports of Plutonium to EURATOM

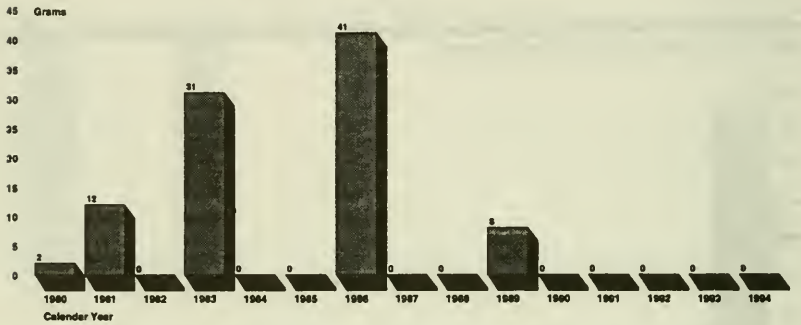
Figure I.6: U.S. Exports to EURATOM—Plutonium, 1980-94

Note: Plutonium is stated in grams because the quantities are too small to be expressed in kilograms.

Source: NMMSS, DOE.

Figure I.6 shows that U.S. exports of plutonium to EURATOM ranged from 0 to 32,307 grams, or 32.3 kgs, annually during 1980 through 1994. A total of 32,793 grams, or 32.8 kgs, were exported during this period. According to DOE, the plutonium category in the NMMSS includes all plutonium that contains less than 20 percent of the plutonium-242 isotope. This category may also include the isotopes plutonium-239, -240 and -241. Plutonium in this category has research uses.

Figure I.7: U.S. Exports to EURATOM—Plutonium-242, 1980-94

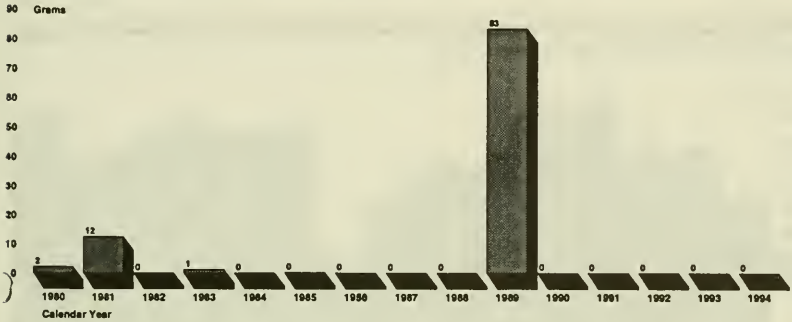


Notes:
1. NMMSS' data are expressed by element weight.
2. Plutonium that contains more than 20 percent of plutonium-242 is reported to NMMSS as plutonium-242.
3. Plutonium-242 is stated in grams because the quantities are too small to be expressed in kilograms.

Source: NMMSS, DOE.

Figure I.7 shows that U.S. exports of plutonium-242 to EURATOM ranged from 0 to 41 grams annually during 1980 through 1994. A total of 94 grams were exported during this period. This category includes all plutonium that has greater than 20 percent of plutonium-242. According to NRC, plutonium-242 is used for research purposes in calibrating equipment, such as mass spectrometers used in research institutes.

Figure I.8: U.S. Exports to EURATOM—Plutonium-238, 1980-94



Notes:
1. NMMSS' data are expressed by element weight.
2. Plutonium-238 is stated in grams because the quantities are too small to be expressed in kilograms.

Source: NMMSS, DOE.

Figure I.8 shows that U.S. exports of plutonium-238 to EURATOM ranged from 0 to 83 grams annually during 1980 through 1994. A total of 99 grams of plutonium-238 were exported during this period. According to DOE and NRC, plutonium-238 can be used for research and thermionic heating sources.

U.S. Exports to Japan

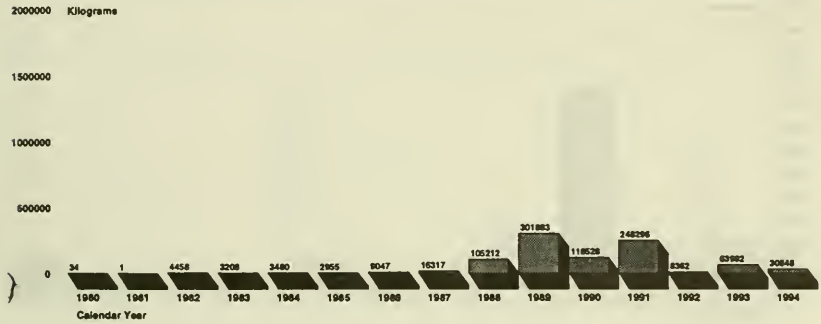
Figure I.9: U.S. Exports to Japan—Enriched Uranium, 1980-94

Note: NMMSS' data are expressed by element weight

Source: NMMSS, DOE.

Figure I.9 shows that U.S. exports of enriched uranium to Japan ranged from 331,067 kgs to 823,421 kgs annually during 1980 through 1994. A total of 10,031,810 kgs were exported during this period.

Figure I.10: U.S. Exports to Japan—Natural Uranium, 1980-94



Note: NMMSS' data are expressed by element weight.

Source: NMMSS, DOE.

Figure I.10 shows that U.S. exports of natural uranium to Japan ranged from 1 kg to 301,883 kgs annually during 1980 through 1994. A total of 917,621 kilograms of natural uranium were exported during this period.

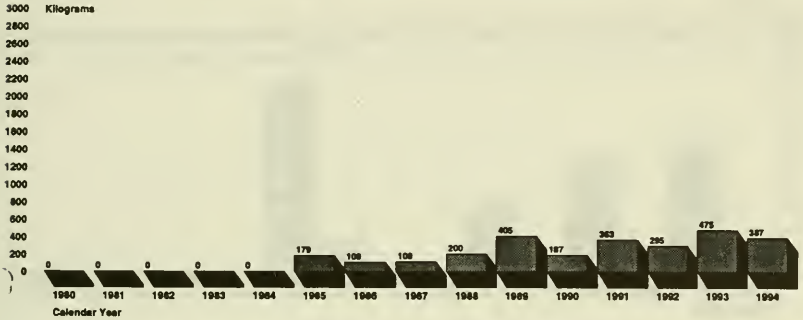
Figure I.11: U.S. Exports to Japan—Depleted Uranium, 1980-94

Note: NMMSS' data are expressed by element weight.

Source: NMMSS, DOE.

Figure I.11 shows that U.S. exports of depleted uranium to Japan ranged from 0 to 7,502 kgs annually during 1980 through 1994. A total of 7,937 kgs of depleted uranium were exported during this period.

Figure I.12: U.S. Exports to Japan—Thorium, 1980-94

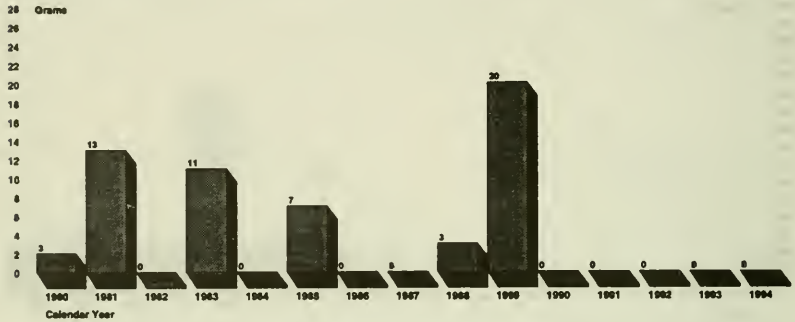


Note: NMMSS' deta are expressed by element weight.

Source: NMMSS, DOE.

Figure I.12 shows that U.S. exports of thorium to Japan ranged from 0 to 475 kgs annually during 1980 through 1994. A total of 2,705 kgs were exported during this period.

Figure I.13: U.S. Exports to Japan—Uranium-233, 1980-94



Notes:
1. NMMSS' date are expressed by element weight.
2. Uranium-233 is stated in grams because the quantities are too small to be expressed in kilograms.

Source: NMMSS, DOE.

Figure I.13 shows that U.S. exports of uranium-233 to Japan ranged from 0 to 20 grams annually during 1980 through 1994. A total of 56 grams were exported during this period.

U.S. Exports to Japan of Plutonium

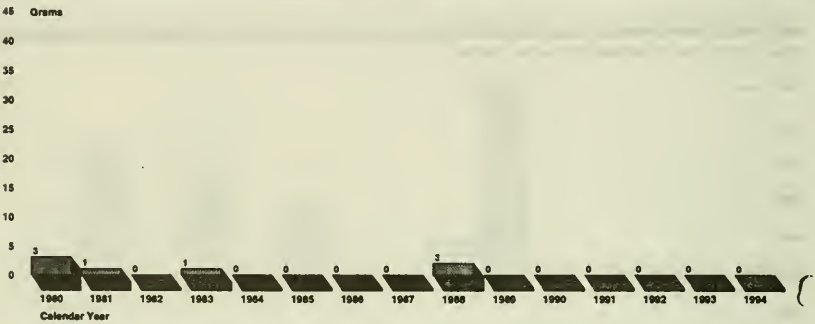
Figure I.14: U.S. Exports to Japan—Plutonium, 1980-94

Notes:
1. NMMSS' data are expressed by element weight.
2. Plutonium is stated in grams because the quantities are too small to be expressed in kilograms.

Source: NMMSS, DOE.

Figure I.14 shows that U.S. exports of plutonium to Japan ranged from 0 to 1,949 grams, or 1.95 kgs, annually during 1980 through 1994. The total amount of plutonium exported during this period was 2,420 grams, or 2.42 kgs. These exports, like the exports to EURATOM, are used as laboratory standards and for research purposes, according to NRC.

Figure I.15: U.S. Exports to Japan—Plutonium-242, 1980-94



Notes:
1. NMMSS' data are expressed by element weight.
2. Plutonium-242 is stated in grams because the quantities are too small to be expressed in kilograms.

Source: NMMSS, DOE.

Figure I.15 shows that U.S. exports of plutonium-242 to Japan ranged from 0 to 3 grams annually, during 1980 through 1994. A total of 7 grams were exported during this period. Like EURATOM, Japan uses plutonium-242 as laboratory standards and for research purposes.

Figure I.16: U.S. Exports to Japan—Plutonium-238, 1980-94

Notes:
1. NMMSS' data are expressed by element weight.
2. Plutonium-238 is stated in grams because the quantities are too small to be expressed in kilograms.

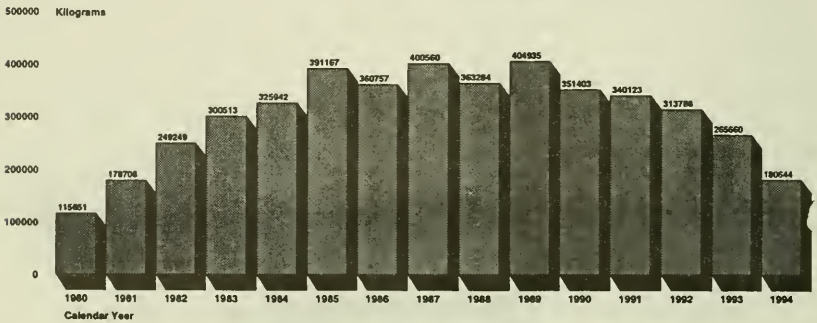
Source: NMMSS, DOE.

Figure I.16 shows that U.S. exports of plutonium-238 to Japan ranged from 0 to 15 grams annually during 1980 through 1994. A total of 19 grams were exported during this period.

22-883 96 – 5

U.S.-Origin Nuclear Material Transferred From Japan to EURATOM

Figure I.17: U.S.-Origin Enriched Uranium Exported From Japan to EURATOM, 1980-94

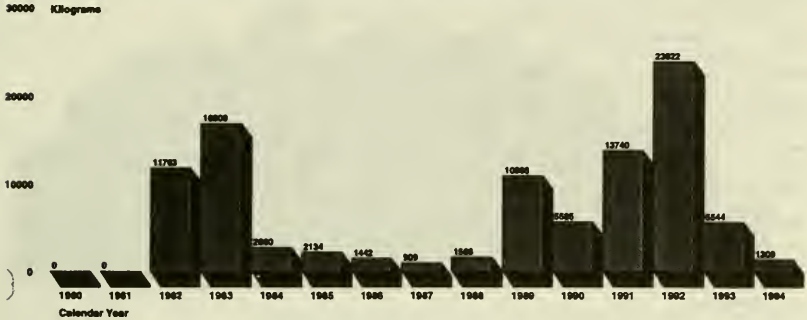


Note: NMMSS' data are expressed by element weight.

Source: NMMSS, DOE.

Figure I.17 shows that U.S.-origin enriched uranium transferred from Japan to EURATOM ranged from 115,651 kgs to 404,935 kgs annually during 1980 through 1994. Japan transferred a total of 4,542,383 kgs of U.S.-origin enriched uranium to EURATOM during this period.

Figure I.18: U.S.-Origin Depleted Uranium Exported From Japan to EURATOM, 1980-94

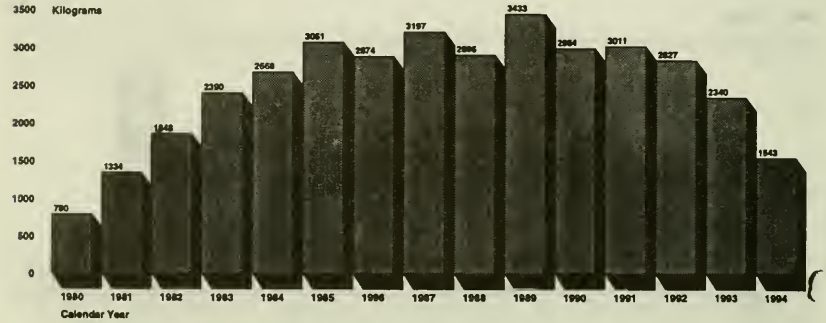


Note: NMMSS' data are expressed by element weight.

Source: NMMSS, DOE.

Figure I.18 shows that U.S.-origin depleted uranium transferred from Japan to EURATOM ranged from 0 to 23,822 kgs annually during 1980 through 1994. A total of 98,178 kgs were exported during this period.

Figure I.19: U.S.-Origin Plutonium Exported From Japan to EURATOM, 1980-94



Note: NMMSS' data are expressed by element weight.

Source: NMMSS, DOE.

Figure I.19 shows that U.S.-origin plutonium transferred from Japan to EURATOM ranged from 780 kgs to 3,433 kgs annually during 1980 through 1994. A total of 37,187 kgs were exported by Japan to EURATOM during this period.

Appendix II

Dollar Values and Amounts of U.S. Exports to EURATOM Countries and Japan

We obtained the dollar values for uranium and plutonium exports from the Department of Commerce's National Trade Data Bank. According to the Department of Commerce, the data bank was established by the Omnibus Trade and Competitiveness Act of 1988 to provide "reasonable public access" to an Export Promotion data system and an International Economic data system from 15 federal agencies. The export data bank contains statistics on the values of U.S. exports measured at the U.S. port of export. The value of a nuclear export item (material or component) is based on the transaction price, including inland freight, insurance, and the other charges incurred in placing the freight alongside the carrier at the U.S. port of export. The value excludes the cost of loading the merchandise aboard the exporting carrier and also excludes freight, insurance, and any other charges or transportation costs beyond the port of export. These statistics, however, do not always reflect the value as defined above, as exporters sometimes find it difficult to assign a value in accordance with this definition. The extent to which the statistics reflect this state depends largely on the accuracy of reporting by shippers on their export declarations.

We used information from the export data bank to identify the total value and quantities for the commodities uranium and plutonium shipped by the United States to EURATOM countries and Japan. The data bank information covered the period for calendar years 1989 through August 1994. Tables II.1 through II.11 show the dollar values and amounts of uranium and plutonium exports to EURATOM countries, and tables II.9 through II.11 show the U.S. dollar values and amounts of U.S. exports to Japan.

Table II.1: Dollar Values of U.S. Exports of Nuclear Materials to EURATOM, 1989-Aug.1994

Thousands of dollars

Material	1994	1993	1992	1991	1990	1989	Total
Natural uranium	$ 6,436	$ 10,473	$ 43,865	$ 7,176	$ 8,044	$ 53,546	$ 129,540
Enriched uranium	172,611	165,430	150,798	138,651	129,421	204,442	961,353
Depleted uranium	4,149	2,156	1,588	4,616	2,635	2,988	18,132
Plutonium	4,130	8,653	5,096	5,283	5,323	6,596	35,081
Total	**$187,326**	**$186,712**	**$201,347**	**$155,726**	**$145,423**	**$267,572**	**$1,144,106**

Source: National Trade Data Bank, Department of Commerce.

Table II.2: Dollar Values of U.S. Exports of Natural Uranium Metal, Compounds, and Ore to EURATOM Countries, 1989-Aug.1994

Thousands of dollars

Country	1994	1993	1992	1991	1990	1989	Total
Denmark	$ 4	$ 0	$ 0	$ 0	$ 0	$ 10	$ 14
France	0	6,000	20	1,529	5	24,154	31,708
Germany	0	51	50	31	180	0	312
Italy	0	0	0	0	0	2	2
Netherlands	0	4,176	522	554	75	67	5,394
Spain	0	0	5	3,397	0	0	3,402
United Kingdom	6,432	246	43,268	1,665	7,784	29,313	88,708
Total	**$6,436**	**$10,473**	**$43,865**	**$7,176**	**$8,044**	**$53,546**	**$129,540**

Source: National Trade Data Bank, Department of Commerce.

Table II.3: Amounts of U.S. Exports of Natural Uranium Metal, Compounds, and Ore to EURATOM Countries, 1989-Aug.1994

In kilograms

Country	1994	1993	1992	1991	1990	1989	Total
Denmark	1	0	0	0	0	132	133
France	0	9,282	10	20,432	23	479,861	509,608
Germany	0	120	111	3,945	2,228	0	6,404
Italy	0	0	0	0	0	22	22
Netherlands	0	18,520	33,696	12,287	436	218	65,157
Spain	0	0	3	14,515	0	0	14,518
United Kingdom	184,752	1,329	496,727	61,816	165,520	362,764	1,272,908
Total	**184,753**	**29,251**	**530,547**	**112,995**	**168,207**	**842,997**	**1,868,750**

Source: National Trade Data Bank, Department of Commerce.

Table II.4: Dollar Values of U.S. Exports of Enriched Uranium Compounds to EURATOM Countries, 1989-Aug.1994

Thousands of dollars

Country	1994	1993	1992	1991	1990	1989	Total
Belgium	$ 0	$ 0	$ 0	$ 0	$ 6	$ 52	$ 58
Denmark	0	0	0	535	0	0	535
France	34,003	123	38,033	16,676	12,363	30,990	132,188
Germany	92,113	141,617	91,508	101,216	97,471	104,877	628,802
Ireland	0	21	0	0	0	0	21
Italy	0	7	10	0	0	0	17
Netherlands	0	0	0	0	1,649	13	1,662
Spain	20,905	13,953	1,965	4,750	858	2,303	44,734
United Kingdom	25,590	9,709	19,282	15,474	17,074	66,207	153,336
Total	**$172,611**	**$165,430**	**$150,798**	**$138,851**	**$129,421**	**$204,442**	**$961,353**

Source: National Trade Data Bank, Department of Commerce.

Table II.5: Amounts of U.S. Exports of Enriched Uranium Compounds to EURATOM Countries, 1989-Aug.1994

In kilograms

Country	1994	1993	1992	1991	1990	1989	Total
Belgium	0	0	0	0	29	974	1,003
Denmark	0	0	0	492	0	0	492
France	26,049	142	66,631	15,503	27,295	41,226	176,846
Germany	155,035	322,693	377,638	731,611	749,373	346,440	2,682,790
Ireland	0	14	0	0	0	0	14
Italy	0	1	46	0	0	0	47
Netherlands	0	0	0	0	10,869	39	10,908
Spain	47,588	24,057	35,930	190,234	55,358	24,471	377,638
United Kingdom	41,234	18,037	37,415	33,367	17,039	65,492	212,584
Total	**269,906**	**364,944**	**517,660**	**971,207**	**859,963**	**478,642**	**3,462,322**

Source: National Trade Data Bank, Department of Commerce.

Table II.6: Dollar Values of U.S. Exports of Depleted Uranium Compounds to EURATOM Countries, 1989-Aug.1994

Thousands of dollars

Country	1994	1993	1992	1991	1990	1989	Total
Belgium	$ 0	$ 0	$ 0	$ 20	$ 31	$ 0	$51
Denmark	0	0	0	0	0	6	6
France	2,116	542	0	0	5	0	2,663
Germany	210	0	0	448	1,286	0	1,944
Netherlands	7	0	0	0	0	0	7
United Kingdom	1,816	1,614	1,588	4,148	1,313	2,982	13,461
Total	**$4,149**	**$2,156**	**$1,588**	**$4,616**	**$2,635**	**$2,988**	**$16,132**

Source: National Trade Data Bank, Department of Commerce.

Table II.7: Amounts of U.S. Exports of Depleted Uranium Compounds to EURATOM Countries, 1989-Aug.1994

In kilograms

Country	1994	1993	1992	1991	1990	1989	Tota
Belgium	0	0	0	41	1,144	0	1,185
Denmark	0	0	0	0	0	169	169
France	176,786	44,882	0	0	45	0	221,713
Germany	114	0	0	42,844	52,380	0	95,338
Netherlands	24	0	0	0	0	0	24
United Kingdom	23,602	24,664	29,535	98,668	14,768	47,389	238,626
Total	**200,526**	**69,546**	**29,535**	**141,553**	**68,337**	**47,558**	**557,055**

Source: National Trade Data Bank, Department of Commerce.

Table II.8: Dollar Values of U.S. Exports of Plutonium to EURATOM Countries, 1989-Aug. 1994

Thousands of dollars

Country	1994	1993	1992	1991	1990	1989	Total
Belgium	$ 359	$ 428	$ 468	$ 467	$ 402	$ 246	$ 2,370
Denmark	23	36	3	69	31	44	206
France	852	1,068	911	608	1,106	2,012	6,557
Germany	716	4,926	1,100	1,223	1,205	1,108	10,278
Greece	15	28	27	8	7	7	92
Ireland	0	0	0	0	0	6	6
Italy	651	905	1,295	1,443	1,043	1,135	6,472
Netherlands	133	280	211	256	340	511	1,731
Portugal	14	0	6	20	83	13	136
Spain	1,032	410	431	605	553	521	3,552
United Kingdom	335	572	644	584	553	993	3,681
Total	**$4,130**	**$8,853**	**$5,096**	**$5,283**	**$5,323**	**$6,596**	**$35,081**

Source: National Trade Data Bank, Department of Commerce.

Table II.9: Dollar Values of U.S. Exports of Uranium to Japan, 1989-Aug. 1994

Thousands of dollars

Calendar year	Natural uranium	Enriched uranium	Depleted uranium	Total
1994	$ 19	$ 410,484	$ 0	$ 410,503
1993	31,878	698,321	9	730,208
1992	59,110	654,987	0	714,097
1991	43,738	678,913	4	722,655
1990	7,377	598,390	359	606,126
1989	191,140	539,839	0	730,979
Total	**$333,262**	**$3,580,934**	**$372**	**$3,914,588**

Source: National Trade Data Bank, Department of Commerce.

Table II.10: Amounts of U.S. Exports of Uranium to Japan, 1989-Aug. 1994

In kilograms

Calendar year	Natural uranium	Enriched uranium	Depleted uranium	Total
1994	270	418,842	0	419,112
1993	164,139	776,424	22	940,585
1992	80,137	959,002	0	1,039,139
1991	127,914	927,724	12	1,055,650
1990	133,159	1,170,443	1,609	1,305,211
1989	359,530	795,574	0	1,155,104
Total	**865,149**	**5,048,009**	**1,643**	**5,914,801**

Source: National Trade Data Bank, Department of Commerce.

Table II.11: Dollar Values of U.S. Exports of Plutonium to Japan, 1989-Aug. 1994

Thousands of dollars

Calendar year	Amount
1994	$ 1,009
1993	1,128
1992	2,268
1991	1,732
1990	1,232
1989	3,006
Total	**$10,375**

Source: National Trade Data Bank, Department of Commerce.

Appendix III

Comments From the Nuclear Regulatory Commission

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

Mr. Gene Aloise
U.S. General Accounting Office
Suite 201
111 Massachusetts Ave NW
Washington, DC 20001

Dear Mr. Aloise:

We have reviewed the GAO draft report "Nuclear Materials: Information on Nuclear Exports Controlled by U.S.- EURATOM Agreement," as requested in your memorandum of May 16, 1995. In addition to the specific editorial changes marked on the report, we have two comments:

Now on p. 18.

1. The graphs in the report are misleading in that similar bars are used to represent amounts varying from millions of kilograms to amounts as small as units of grams. We suggest that GAO more clearly emphasize the units being used on the Y axis on the charts, perhaps by using larger type (as was done on the chart on page 21).

Now on p. 39.

2. Some information on the chart on page 42 is questionable. We are puzzled by the reported plutonium sales to some of the listed countries, especially Denmark, Greece and Portugal. These countries have very small nuclear research programs and no power programs, and we doubt they have in fact imported plutonium from the U.S. The NRC's export licensing data base shows no licenses for exports to Greece or Portugal, one small (0.005 kg) plutonium export case for Denmark, and only three plutonium export cases for Spain.[1] We suggest that the GAO seek confirmation from Commerce and DOE [or the DOE contractor which operates the Nuclear Materials Management and Safeguards System (NMMSS)] before including the chart in the report.

Sincerely,

James L. Blaha
Assistant for Operations
Office of the Executive Director
for Operations

Enclosure:
GAO/RCED-95-168 (Draft Report),
w/OIP annotations

[1] U.S.-supplied nuclear materials to any country within the European Atomic Energy Community (EURATOM) can be freely retransferred within EURATOM without prior notification to or approval by the U.S. Thus, it is possible, although not considered likely, that U.S.-supplied plutonium has gone to the countries in question and has been reported to Commerce's National Trade Data System without appearing in the NRC's export licensing records.

Appendix IV

Comments From the Department of Commerce

THE SECRETARY OF COMMERCE
Washington, D.C. 20230

JUN - 5 1995

Mr. Victor S. Rezendes
Director, Energy Issues
General Accounting Office
Washington, D.C. 20548

Dear Mr. Rezendes:

Thank you for the opportunity to review and provide comments on your draft report entitled "Nuclear Materials: Information on Nuclear Exports Controlled by U.S.-EURATOM Agreement."

The Department of Commerce does not control the export of the items covered by this draft report. These items (uranium, thorium, plutonium, etc.) are licensed for export by the Nuclear Regulatory Commission.

The draft report notes an apparent difference between the amounts of nuclear material exports identified in the Department of Energy's database and the amounts identified in the Department of Commerce's National Trade Data Bank. GAO first made this alleged inconsistency known to us in this draft report. We are unable to comment on this in the short time you gave us to respond. We would be pleased to work with GAO on this issue, however.

If we may be of further assistance to you, please contact Ms. Rosemary Warren, Director, Office of Congressional and Public Affairs, Bureau of Export Administration, at (202) 482-0097.

Sincerely,

Ronald H. Brown

Appendix V

Comments From the Department of Energy

Department of Energy
Washington, DC 20585

May 18, 1995

Mr. Victor S. Rezendes
Director, Energy and Science Issues
Resources, Community, and
Economic Development Division
U.S. General Accounting Office
Washington, D.C. 20548

Dear Mr. Rezendes:

The Department of Energy appreciates the opportunity to review the draft General Accounting Office report GAO/RCED-95-168, "Nuclear Materials: Information on Nuclear Exports Controlled by U.S.-EURATOM Agreement." We have no comment on the facts of the report as they are portrayed. The Department is monitoring the Department of State's negotiations for a new European Atomic Energy Community Concerning Peaceful Uses of Atomic Energy (EURATOM agreement) and we are confident a new agreement will be achieved prior to the December 31, 1995 expiration of the current agreement.

Sincerely,

Kenneth E. Baker
Acting Director
Office of Nonproliferation
and National Security

Appendix VI

Comments From the Department of State

United States Department of State

Washington, D.C. 20520

BUREAU OF POLITICAL-MILITARY AFFAIRS

June 2, 1995

Mr. Mario Zavala
U.S. General Accounting Office
111 Massachusetts Avenue N.W.
Suite 201
Washington, D.C. 20001

Dear Mr. Zavala:

Thank you for the opportunity to review GAO's draft report, "Nuclear Materials: Information on Nuclear Exports Controlled by U.S.-EURATOM Agreement" (GAO/RCED-95-168).

Department officials have read the draft report with interest. We do not have any specific comments on the report at this time.

Sincerely,

John A. Dooley
Office of Nuclear Energy Affairs

Appendix VII

Major Contributors to This Report

Resources, Community, and Economic Development Division, Washington, D.C.	Bernice Steinhart, Associate Director, Energy and Science Issues Gene Aloise, Assistant Director Mary Alice A. Hayward, Evaluator-in-Charge Thomas J. Flaherty, Senior Evaluator Mario Zavala, Senior Evaluator Duane G. Fitzgerald, Nuclear Engineer

United States General Accounting Office

GAO

Report to the Ranking Minority Member, Committee on Governmental Affairs, U.S. Senate

August 1995

DEPARTMENT OF ENERGY

Poor Management of Nuclear Materials Tracking System Makes Success Unlikely

GAO/AIMD-95-165

GAO

United States
General Accounting Office
Washington, D.C. 20548

Accounting and Information
Management Division

B-260569

August 3, 1995

The Honorable John Glenn
Ranking Minority Member
Committee on Governmental Affairs
United States Senate

Dear Senator Glenn:

This report responds to your February 1995 request that we review the Department of Energy's (DOE) progress in developing a new nuclear materials tracking system. This new system is intended to replace the existing Nuclear Materials Management and Safeguards System (NMMSS), which is the United States' official system for tracking U.S. imports and exports of nuclear materials. In December 1994, we reported on DOE's planning for the replacement NMMSS.[1] This report discusses (1) what actions DOE has taken to implement the recommendations in our previous report and (2) whether DOE is adequately addressing key system development risks.

Results in Brief

DOE has not implemented any of the recommendations contained in our prior report and has no plans to do so. In December 1994, we reported that DOE had not adequately planned the replacement NMMSS and recommended that the Department determine users' requirements, investigate alternatives, and conduct cost-benefit analyses before proceeding further with the replacement system. However, DOE continued with the system development without performing these steps because it believed that its planning was sufficient and that it would not be cost-effective to delay the replacement system. Due to its lack of sound planning, DOE does not know if the system will fulfill the needs of its major users or be cost-effective.

These planning risks are magnified by additional system development risks that DOE is not adequately addressing. For example, the subcontractor building the replacement NMMSS has not documented its system development process. Because little system documentation exists, and the contract does not require any interim deliverables describing development progress before complete system delivery, DOE cannot determine the status of the development effort. In addition, the subcontractor did not place its software under configuration management.

[1]Nuclear Nonproliferation: U.S. International Nuclear Materials Tracking Capabilities Are Limited (GAO/RCED/AIMD-95-5, December 27, 1994).

Sound configuration management helps ensure that the status of the system's software is known at all times and that, when more than one programmer is making changes and updating the software, all changes are consistent and are being written to the same software version. Finally, DOE plans to pay for, install, and use the replacement NMMSS without requiring that it pass acceptance testing. Acceptance testing demonstrates that a system meets hardware, software, and performance requirements and users' operational needs. Without such testing, coupled with inadequate planning and the lack of basic system development discipline and sound practices, DOE has no assurance that the replacement NMMSS will ever perform as intended.

Background

NMMSS is the United States' official nuclear materials tracking and accounting system. NMMSS provides information on nuclear materials to support both domestic programs and international nuclear policies. Keeping track of the growing amount of nuclear materials is especially important as a result of the breakdown of the Soviet Union and increases in both domestic and international terrorism. Tracking and accounting for the hundreds of tons of plutonium, highly enriched uranium, and other nuclear materials that have accumulated are important to help (1) ensure that nuclear materials are used only for peaceful purposes, (2) protect nuclear materials from loss, theft, or other diversion, (3) comply with international treaty obligations, and (4) provide data to policymakers and other government officials on the amount and location of nuclear materials.

The NMMSS database contains data on nuclear materials supplied and controlled under international agreements, including U.S.-supplied international nuclear materials transactions, foreign contracts, import/export licenses, government-to-government approvals, and other DOE authorizations, such as authorizations to retransfer U.S.-supplied materials between foreign countries. NMMSS also maintains and provides DOE with information on domestic production and materials management, safeguards, physical accountability, financial and cost accounting, and other data related to nuclear materials accountability and safeguards for Nuclear Regulatory Commission licensees.

DOE and the Nuclear Regulatory Commission cosponsor NMMSS, and it is managed and operated by a DOE contractor—Martin Marietta Energy Systems, Incorporated. NMMSS has been used to account for U.S. imports and exports of nuclear materials since 1977.

Because the existing NMMSS is an older system, DOE decided to replace and modernize it. The existing NMMSS is housed on a mainframe using unstructured COBOL code. Performing modifications on the existing NMMSS and designing custom reports are difficult because of the volume and complexity of the code. Accordingly, DOE's Office of Nonproliferation and National Security, which is responsible for operating NMMSS, tasked the Lawrence Livermore National Laboratory with developing a new NMMSS. Livermore hired a subcontractor to perform this task in February 1994 and assigned a program manager to oversee the effort. In April 1994, Livermore formed a technical advisory committee, composed of senior computer scientists and material control and accountability specialists, to assist the program manager in overseeing the system development.

The replacement NMMSS is scheduled to become operational on September 1, 1995. Martin Marietta is scheduled to discontinue operation of the existing NMMSS during September 1995.

Scope and Methodology

To address our objectives, we reviewed the replacement NMMSS contract, transition plan, test plan, and various other draft system documents. We requested documentation on the status of the system coding and testing; however, none was available for our review. We also analyzed documentation provided to us by Lawrence Livermore's technical advisory committee on the subcontractor's development efforts. In addition, we analyzed documentation from various user groups on their concerns with the NMMSS development. We analyzed DOE Order 1330.1D, Computer Software Management, to determine its applicability to this project and whether or not it was being followed.

We interviewed DOE officials in the Office of Nonproliferation and National Security concerning actions taken to implement the recommendations in our previous report and the status of the NMMSS development. We also interviewed the NMMSS program manager, members of Lawrence Livermore's technical advisory committee, contract officials at DOE and Lawrence Livermore, and the NMMSS subcontractor's lead programmers, system engineer, and project managers to determine the status of the system development. In addition, we interviewed officials in DOE's Defense Programs Office—the biggest user of NMMSS information—on their concerns about the replacement NMMSS development.

We performed our work between February 1995 and May 1995, in accordance with generally accepted government auditing standards. Our work was primarily done at DOE's headquarters in Washington, D.C., and its offices in Germantown, Maryland; at Lawrence Livermore National Laboratory in Livermore, California; and at the subcontractor's facility in Norcross, Georgia. The Department of Energy provided written comments on a draft of this report. These comments are presented and evaluated in the report, and are reprinted in appendix I.

DOE Is Pursuing the Replacement NMMSS Without Addressing Critical Planning Issues

In December 1994, we reported that DOE did not adequately plan the development effort for the replacement NMMSS.[2] For example, DOE did not follow sound system development practices such as identifying and defining users' needs and adequately exploring design alternatives that would best satisfy these needs in the most economic fashion. Accordingly, we recommended that DOE determine users' requirements, investigate alternatives, conduct cost-benefit analyses, and develop a plan to meet identified needs before investing further resources in the replacement NMMSS.

In its official response to the recommendations in our prior report, DOE stated that it did not concur with our recommendations and that it did not believe it would be cost-effective to delay its effort to transition from the existing system to the new system. Further, in commenting on a draft of this report, the Acting Director of the Office of Nonproliferation and National Security stated that DOE's planning was sufficient. However, because of DOE's lack of basic planning, it does not know if the system will fulfill the needs of its major users or be cost-effective.

System Development Risks Are High

Adhering to generally accepted system development practices helps to ensure that information systems perform as desired.[3] These practices include (1) generating clear, complete, and accurate documentation throughout the system development process, (2) placing the software development under configuration management, and (3) ensuring that the system successfully completes acceptance testing prior to becoming operational. However, because DOE has not required the subcontractor to

[2]GAO/RCED/AIMD-95-5, December 27, 1994.

[3]Such practices are discussed in Defense Acquisition Management Policies and Procedures (DOD 5000.2, February 1991); Systems Engineering Management Guide (Defense Systems Management College, January 1990); Capability Maturity Model for Software (CMU/SEI-91-TR-24, ESD-TR-91-24, August 1991); Key Practices of the Capability Maturity Model (CMU/SEI-91-TR-25, ESD-TR-91-25, August 1991); and Defense System Software Development (DOD-STD-2167A, February 1988).

follow any of these practices for the replacement NMMSS, the Department does not know how much of the system development is completed and whether the part that is completed performs as required. As a result, the risk of system failure is inordinately high.

Little System Development Documentation Exists

DOE Order 1330.1D, Computer Software Management, requires that the development of a system be documented so that, among other things, the status of the system is known at all times. Documentation, such as the results of system testing and the tracking of source code as it changes, allows program managers to review the development's progress and determine if requirements are being met.

The subcontractor developing the replacement NMMSS could not provide any system documentation—software specifications, system requirements, results of formal reviews (e.g., system/preliminary/critical design) or informal system testing reports, operational procedures, quality assurance checklists, or project tracking reports. Because little system documentation exists, and the contract does not require any interim deliverables that measure system performance, DOE does not know the status of the system development. In addition, members of Livermore's technical advisory committee told us they have been unable to obtain the documentation they needed to determine the status of the development effort. As a result, the committee said it could not accurately determine such factors as the number of lines of code in the system. In fact, the advisory committee could only estimate system size in very gross terms—between 10,000 and 100,000 lines of code.

DOE officials agreed that the development effort is largely undocumented and stated that DOE historically has not enforced its own regulations requiring system documentation. At the conclusion of our review and in commenting on a draft of this report, DOE officials told us that they will begin to require such documentation for the replacement NMMSS.

Configuration Management Was Not Used

A successful system development project should include a software configuration management plan that clearly defines the procedures for identifying, accounting for, and reporting on changes to software items that are under configuration control. Configuration management is necessary throughout the life cycle of a software project because it provides (1) a control mechanism to ensure that the software status is

accurately known at all times and (2) a baseline for system developers and testers.

Although the subcontractor developed a software configuration management plan for the replacement NMMSS, no software had been placed under configuration control. As a result, DOE does not know what version of the software is current, which versions of the software have been tested, what problems were identified during testing, and what corrections are being made. Developing software without configuration management frequently results in projects that are delivered late, exceed budget, and perform poorly.

Officials in DOE's Office of Nonproliferation and National Security agreed that the replacement NMMSS software had not been placed under configuration management at the time of our exit conference. The officials stated that, until recently, they had not required the use of configuration management on software development projects. In its written comments on a draft of this report, DOE stated that the replacement NMMSS is now being placed under configuration control.

DOE Does Not Plan to Adequately Test NMMSS

During acceptance testing, tests are performed to determine if a system will meet its hardware, software, performance, and user operational requirements. Acceptance testing is usually performed by the system developer and witnessed by an independent verification and validation group, which includes system users. Such testing is important to determine if the new system performs as required.

The previous implementation schedule for the replacement NMMSS called for acceptance testing and 2 months of parallel operation with the existing NMMSS. In addition, in a January 1994 memorandum, an official from DOE's Office of Nonproliferation and National Security stated that the replacement NMMSS would not be made operational until "it has been demonstrated that the new system is capable of meeting present and new customer needs and requirements." Adhering to this position on testing the replacement NMMSS would have greatly reduced system risks.

In January 1995, DOE changed its position and decided to make the replacement NMMSS operational without performing acceptance testing. DOE officials stated that this decision was made to avoid the cost of simultaneously funding both the existing and replacement systems. Instead, DOE plans to perform what it is calling "system testing" on a subse-

of system reports—87 of approximately 500 reports. While DOE stated that these 87 reports were selected based on users' needs, it could not produce documentation to validate this statement.

The only system testing at the time of our review was the informal testing that the subcontractor stated it had performed. However, the subcontractor could not provide documentation on either its test plans or the test results. In its written comments on a draft of this report, DOE officials stated that system test procedures have now been written and approved.

In addition, parallel operations with the existing NMMSS are not scheduled. During parallel operations, both systems would perform all required functions, and then outputs would be compared to ensure that the replacement system is producing accurate reports. Because the replacement NMMSS will replicate the functions of the existing NMMSS, a period of parallel operations is especially important.

Without parallel processing, DOE is introducing additional risk that the replacement system will not perform all functions of the existing system or, more importantly, that the information produced by the replacement system will not be accurate. As a result, DOE cannot guarantee its users that the information they need from NMMSS to do their jobs will continue to be available. NMMSS users told us that information they get from the existing NMMSS within hours could take weeks or months to gather if they cannot obtain it from the new NMMSS or if they cannot be sure that the information in the new NMMSS is accurate.

Conclusions

DOE has stated that it will discontinue the existing system on September 1, 1995, and begin operation of the replacement NMMSS without acceptance testing. However, DOE's replacement NMMSS is being developed in an undisciplined, poorly controlled manner that makes success unlikely. Planning was inadequate and basic system development practices are not being followed. As a result, DOE will not know if the replacement NMMSS will produce the accurate and timely reports needed to meet users' needs before it accepts the system and pays the subcontractor.

DOE's disregard for basic system development practices necessary to ensure the accuracy and dependability of its nuclear tracking system is inconsistent with the importance of NMMSS, which provides the United States' official record for tracking nuclear materials. It is not in DOE's best

interests, therefore, to disconnect the existing NMMSS and replace it with an untested, undocumented new system. The history of software development is littered with systems that failed under similar circumstances.

Recommendations

We recommend that the Secretary of Energy immediately terminate any further development of the replacement NMMSS. Further, as we recommended in our December 1994 report, the Secretary should direct the Office of Nonproliferation and National Security to determine users' requirements, investigate alternatives, and conduct cost-benefit analyses before proceeding with any plan to develop a replacement NMMSS.

If, after thorough planning, the Office proceeds with plans to develop a new NMMSS, we recommend that it follow generally accepted system development practices. In the interim, we recommend that DOE continue using the existing NMMSS system until the above recommendations are addressed.

Agency Comments and Our Evaluation

The Department of Energy provided written comments on a draft of this report. Their comments are summarized below and reproduced in appendix I.

The Department of Energy agreed with the need for systems development documentation, configuration management, and adequate testing. However, the Department did not concur with our assessment of its analyses and planning for the system development effort, or with our recommendation that it terminate the system development until users' requirements, alternatives, and cost-benefit analyses have been performed. DOE stated that its planning was adequate because it is converting an existing system from an unstructured language to a structured, fourth generation language, rather than developing a new system.

We disagree. Without sound analyses or planning, DOE does not know that "converting an existing system" is a cost-effective way to meet its needs. Furthermore, as our report discusses, DOE is implementing this unsupported approach in an unsatisfactory manner. Therefore, DOE should discontinue its current effort and perform users' requirements, alternatives, and cost-benefit analyses before proceeding.

As arranged with your office, unless you publicly announce the contents of this report earlier, we plan no further distribution until 30 days from the date of this letter. At that time, we will provide copies of this report to the Secretary of Energy; the Director, Office of Management and Budget; appropriate congressional committees; and other interested parties. Copies will also be made available to others upon request.

Please call me at (202) 512-6253 if you or your staff have any questions. Major contributors to this report are listed in appendix II.

Sincerely yours,

Joel Willemssen

Joel C. Willemssen
Director, Information Resources
Management/Resources, Community,
and Economic Development

Appendix I

Comments From the Department of Energy

Department of Energy
Washington, DC 20585

June 28, 1995

Mr. Joel C. Willemssen
Director, Information Resources
Management/Resources, Community
and Economic Development
General Accounting Office
Washington, D.C. 20548

Dear Mr. Willemssen:

The Office of Nonproliferation and National Security appreciates the opportunity to review the General Accounting Office report, "DEPARTMENT OF ENERGY: Poor Management of Nuclear Materials Tracking System Makes Success Unlikely." We have attached our comments to this report for your review. We understand that the General Accounting Office has recommended that the Secretary of Energy terminate any further development of the replacement Nuclear Materials Management and Safeguards System. However, we are confident that the Department's on-going actions will satisfy the General Accounting Office's concerns and that the replacement Nuclear Materials Management and Safeguards System will meet and eventually exceed U.S. Government requirements.

Sincerely,

Kenneth E. Baker
Acting Director
Office of Nonproliferation and
National Security

Attachment

Comments on
GAO Draft Report
"DEPARTMENT OF ENERGY:
Poor Management of Nuclear Materials Tracking System
Makes Success Unlikely"

General Comments:

The Department is concerned that the General Accounting Office (GAO) feels the Department of Energy did not adequately plan the replacement Nuclear Materials Management and Safeguards System (NMMSS). We agree that the development of any new system must be responsive to users' requirements, include a cost-benefit analysis, and undergo formal systems development. GAO correctly stated that the current NMMSS "..is housed on a mainframe using unstructured COBOL code. Performing modifications on the existing NMMSS and designing custom reports are (sic) difficult because of the volume and complexity of the code." The development of any reports on the existing NMMSS system is laborious and time consuming. Therefore, for the Department to decide to translate the existing unstructured software into industry standard query language, using modern PC technology, without adversely affecting users' requirements and at a reduced recurring cost, would appear to be a benefit of good planning. As stated, the Department is translating an existing system and not formally developing a new system. Therefore, users' requirements are not an issue since the current system meets known user needs.

Specific Comments:

DOE IS PURSUING THE REPLACEMENT NMMSS WITHOUT ADDRESSING CRITICAL PLANNING ISSUES

The Department did not concur with the General Accounting Office criticism of the systems development practices cited in GAO report RCED/AIMD-95-5. The Department still believes that its analysis and review efforts were adequate, notwithstanding the time and budget constraints on its planning and systems development efforts. As stated previously, the Department is upgrading its reporting capabilities by translating an existing system and not formally developing a new system.

LITTLE SYSTEM DEVELOPMENT DOCUMENTATION EXISTS

The Department agrees that there is little formal system development documentation. When the project commenced, emphasis was placed on the translation of the existing NMMSS system rather than the documentation of the process. About halfway through the translation effort, an advisory team, composed of computational experts, was formed to provide systems development expertise. One of its first initiatives was to assist in the development of product and process-related documentation. The product-related documents developed were the system requirements specification and the system test plan. Process-related documents were the software configuration management plan, program management plan, and software quality assurance plan. The Department is aware that there is

an extensive paper trail associated with the software translation effort. However, this paper trail is not in the form of formal system development documentation. The Department is rectifying this situation.

CONFIGURATION MANAGEMENT WAS NOT USED

The Department agrees that a successful system project should include a software configuration management plan that clearly defines the procedures for identifying, accounting for, and reporting on changes to software items that are under configuration control. NMMSS software was placed under configuration management on April 21, 1995, and newly completed modules have been added since then. As part of the software configuration management plan, the software is being placed under configuration management as modules are completed.

DOE DOES NOT PLAN TO ADEQUATELY TEST NMMSS

The Department is well aware of the importance of NMMSS and, therefore plans to adequately test the replacement system. Since November, 1994, the new NMMSS has been processing the same data that the current NMMSS is processing. Processing results are provided to customers in a progressive manner (select group of customers in June, additional customers in July, even more customers in August). Extensive systems test procedures have been written and approved. These procedures include 35 individual tests, many of which are already being rehearsed. The complete systems test suite is scheduled to be run in mid-August. The Department will not allow the new NMMSS to become the government's system of record until system testing is accomplished.

Appendix II

Major Contributors to This Report

Accounting and Information Management Division, Washington, D.C.	Valerie C. Melvin, Assistant Director Keith A. Rhodes, Technical Assistant Director Suzanne M. Burns, Evaluator-in-Charge Linda J. Lambert, Senior Auditor

GAO

United States
General Accounting Office
Washington, D.C. 20548

Resources, Community, and
Economic Development Division

March 1, 1996

The Honorable Ted Stevens
Chairman, Committee on
Governmental Affairs
United States Senate

Dear Mr. Chairman:

We are transmitting the enclosed report in response to your request made at the hearing, held by your Committee on February 28, 1996, on the proposed Agreement for Cooperation in the Peaceful Uses of Nuclear Energy Between the United States of America and the European Atomic Energy Community (EURATOM). You asked that we provide any additional information that would assist the Committee in its consideration of the proposed U.S-EURATOM agreement. This report, prepared at the request of the Chairman, Subcommittee on European Affairs, Senate Committee on Foreign Relations; Senator William V.Roth; and Representative Edward J. Markey, was in draft at the time of the hearing. Therefore, we were unable to discuss its contents in our February 28, 1996, testimony before your Committee.

The report presents our analysis of whether the proposed U.S.-EURATOM agreement satisfies certain requirements for nuclear cooperation agreements under the Atomic Energy Act of 1954. It also discusses (1) whether U.S. sensitive nuclear technology can be exported under the proposed agreement, (2) U.S. suspension rights under the proposed agreement, (3) provisions for safeguarding and protecting nuclear materials exported to EURATOM, (4) the impact of the proposed agreement on the U.S. export licensing process, and (5) the limitations of the U.S. nuclear materials tracking system–the subject of our February 28, 1996, testimony.

I hope this report will be useful to you and the Committee in its deliberations on the proposed agreement. Please call me at (202) 512-3841 if you or your staff have any questions or if we can be of further assistance.

Sincerely yours,

Victor S. Rezendes
Director, Energy, Resources,
and Science Issues

GAO

United States
General Accounting Office
Washington, D.C. 20548

Resources, Community, and
Economic Development Division

B-271143

March 1, 1996

The Honorable Edward J. Markey
House of Representatives

The Honorable Richard G. Lugar
Chairman, Subcommittee on
European Affairs
Committee on Foreign Relations
United States Senate

The Honorable William V. Roth
United States Senate

Nuclear trade between the United States and the European Atomic Energy Community (EURATOM)[1] has been governed since 1958 by an agreement for cooperation that expired at midnight on December 31, 1995. On November 29, 1995, the President transmitted to the Congress a proposed agreement for cooperation in the peaceful uses of nuclear energy between the United States and EURATOM.[2] (See enclosure I for additional information about the agreement.)

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[1]EURATOM currently is composed of 15 countries: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden, and the United Kingdom. We recently issued a report that provides information on the amount and value of nuclear exports to EURATOM. See Nuclear Nonproliferation: Information on Nuclear Exports Controlled by U.S.-EURATOM Agreement (GAO/RCED-95-168, June 16, 1995).

[2]The complete texts of the proposed agreement, the accompanying agreed minute (a separate document, but an integral part of the proposed agreement, which specifies how the agreement will be implemented), the annexes, and other attachments are reprinted in "Proposed Agreement for Cooperation in the Peaceful Uses of Nuclear Energy Between the United States of America and the European Atomic Energy Community (EURATOM)," H.R. Doc. No. 138, 104th Cong., 1st Sess. (1995).

B-271143

As requested, we reviewed the proposed agreement with EURATOM to determine whether it satisfies certain requirements for nuclear cooperation agreements under the Atomic Energy Act of 1954, as amended (act). We focused our analysis on whether the proposed agreement is consistent with requirements in section 123 of the act for U.S. consent and prior approval for retransfers, reprocessing, and designation of storage facilities for U.S.-origin nuclear material. We also agreed to examine (1) whether the proposed agreement covers exports of U.S.-origin sensitive nuclear technology, (2) U.S. suspension rights under the proposed agreement, (3) provisions for safeguarding and protecting nuclear materials exported to EURATOM, and (4) the impact of the proposed agreement on the U.S. export licensing process. In addition, you asked that we discuss any other issues of importance associated with the proposed agreement.

In summary, with respect to advance U.S. approval for retransfers, reprocessing, and designation of storage facilities for U.S.-origin nuclear materials, we conclude that the proposed agreement satisfies these specific requirements of the act. Although the words "consent" and "approval" are not used, the proposed agreement uses other terms, such as "may proceed," that provide the long-term consent and approval for these activities as long as certain conditions are met. (See enclosure II.)

We also determined the following:

-- The proposed agreement does not provide for the transfer of sensitive nuclear technology. (See enclosure II.)

-- The proposed agreement provides that the United States (or EURATOM) may suspend the agreement. In addition to the right to suspend the agreement itself, the United States (or EURATOM) may suspend its advance long-term consent to reprocessing and alteration in the form or content of certain nuclear materials. (See enclosure II.)

-- The proposed agreement provides for a range of controls over European facilities handling U.S. nuclear materials. According to State Department and Nuclear Regulatory Commission (NRC) officials, these include requirements for International Atomic Energy Agency and EURATOM safeguards and for physical protection measures meeting international standards for U.S. nuclear materials in EURATOM facilities. (See enclosure III.)

-- The proposed agreement will not have any discernible impact on the U.S. export licensing process. According to NRC's Director, Division of Nonproliferation, Exports, and Multilateral Relations, the proposed agreement satisfies the licensing criteria under the Nuclear Nonproliferation Act of 1978, and the licensing criteria under the proposed agreement would remain the same as the licensing criteria under the previous agreement.

In addition, we determined that the limitations in the system for tracking U.S. nuclear materials exported to EURATOM will not be corrected under the proposed agreement. In December 1994, we reported that the U.S. system for tracking exported U.S. nuclear materials may not contain correct data on the location (facility) of these materials within foreign countries or on their current status.[3] According to an official in State's Office of Nuclear Affairs, negotiations are under way to develop an administrative arrangement through which EURATOM would, among other things, annually report to the United States the amount of U.S.-origin nuclear material within EURATOM. However, this information would not show the amounts of nuclear material on a country-by-country or a facility-by-facility basis.

AGENCY COMMENTS

We provided a draft of this report to the Secretaries of State and Energy, the Director of the Arms Control and Disarmament Agency (ACDA), and the Chairman of NRC for review and comment. In general, State, ACDA, DOE, and NRC agreed with the draft report and suggested technical changes that we incorporated where appropriate.

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In determining whether the proposed U.S.-EURATOM agreement satisfies certain requirements for consent and approval under section 123 of the Atomic Energy Act of 1954, as amended by the Nuclear Non-Proliferation Act of 1978, we reviewed the proposed agreement and the pertinent legislation. We also reviewed other pertinent documents, including legislative analyses by ACDA, State, and Energy, which accompanied the submission of the proposed agreement to the Congress, and the combined

[3]Nuclear Nonproliferation: U.S. International Nuclear Materials Tracking Capabilities Are Limited (GAO/RCED/AIMD-95-5, Dec. 27, 1994).

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written response of these agencies to our questions concerning the proposed agreement. We also interviewed officials at the Departments of State and Energy and at NRC, including State's Principal Deputy Director of the Office of Nuclear Energy Affairs. We also spoke with representatives of the Nuclear Energy Institute and the Nuclear Control Institute.

As arranged with your offices, unless you publicly announce its contents earlier, we plan no further distribution of this report for 7 days. At that time, we will send copies of this report to the appropriate congressional committees, the Secretaries of State and Energy, the Director of ACDA, the Chairman of NRC, and other interested parties. If you or your staff have any questions about this report, please call me at (202) 512-3841. Major contributors to this work were Gene Aloise, Doreen S. Feldman, Susan W. Irwin, and Mario Zavala.

Victor S. Rezendes
Director, Energy, Resources, and
Science Issues

BACKGROUND

EURATOM was established in 1957 to, among other things, facilitate the development of nuclear energy, ensure a regular supply of nuclear fuel, and guarantee that nuclear materials are not diverted for purposes other than those for which they are intended. During the years in which the previous EURATOM agreement was in effect, the United States supplied significant assistance--including fuel, technologies, equipment, and services--to the civilian nuclear energy programs in EURATOM member states. This assistance, and arrangements with U.S. manufacturers for the commercial licensing of reactor technology, greatly aided the establishment of manufacturing capability in several EURATOM member states and still underlies a substantial transatlantic trade in these nuclear items, although over the years European programs have gradually reduced their reliance on nuclear supplies from the United States. The previous agreement also formed a major part of Europe's substantial nuclear cooperation with Japan, because many of the technologies and materials involved in this trade were originally supplied by the United States. The expiration of the previous agreement has halted the transfer of U.S.-origin nuclear material from the United States to EURATOM and the retransfer from Japan to EURATOM of such material.

In 1978, the Congress enacted the Nuclear Non-Proliferation Act (NNPA), expanding controls on all nuclear exports by the United States. In particular, NNPA required foreign governments to obtain the "prior consent" of the United States before reprocessing and other sensitive activities could occur. NNPA called for negotiations to replace the existing agreement with one that conformed to NNPA's requirements. Because the previous EURATOM agreement predated these requirements, it did not require prior U.S. consent for these activities. In order to permit U.S. exports under agreements that predated NNPA and did not fully comply with all of its requirements, successive presidents annually waived NNPA's requirements.[4]

EURATOM members believed that the strict application of NNPA's requirements to their civilian nuclear programs would be an intrusion by the United States into their sovereign decisions on how to operate their nuclear fuel cycles. These fears apparently were exacerbated over the years by delays in request-by-request approvals for various activities, and they account to a large extent for the difficult and extended negotiations that ultimately resulted in the proposed EURATOM agreement.

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[4]Waiver authority is found in section 126(a)(2) of the act, 42 U.S.C. 2155(a)(2).

In 1985, amendments to NNPA added new procedures for congressional consideration of proposed agreements for cooperation.[5] The amendments provided two review periods for these agreements. The first period lasts for not less than 30 days of continuous session and contemplates consultation between the Congress and the President concerning the consistency of the proposed agreement with the requirements of the act. The second period is for 60 days of continuous session, during which the committees hold hearings and recommend whether the agreement should be approved or disapproved. The two periods of congressional review routinely have been telescoped into one 90-day period of continuous session, a practice consistent with the legislative history of the provision.[6] If the agreement is found to be consistent with the act, it becomes effective after the expiration of the total 90-day period unless the Congress passes a joint resolution of disapproval. Agreements that do not meet all the requirements of the act must be submitted with a presidential waiver of noncomplying provisions and can enter into force only if the Congress adopts a joint resolution of approval.

[5]PL. 99-64, title III, 301(a) and (b), 99 Stat. 120, 159 and 160 (1985), 42 U.S.C. 2153(b) and (d).

[6]According to the House conference report to the bill containing these provisions, "The steps for submitting, consulting and approving nuclear cooperation agreements set forth in section 123b, as amended, need not be taken in any particular sequence . . . [T]hese amendments do not require separate submissions under section 123b and section 123d. A single submission would satisfy the law." H.R. Rep. No. 180, 99th Cong., 1st Sess., 52-53 (1985).

ANALYSIS OF SELECTED PROVISIONS OF THE PROPOSED AGREEMENT FOR COOPERATION BETWEEN THE UNITED STATES AND EURATOM

This enclosure provides our analysis of certain provisions of the proposed Agreement for Cooperation in the Peaceful Uses of Nuclear Energy Between the United States of America and the European Atomic Energy Community (EURATOM).[7] Specifically, we examined whether the proposed agreement is consistent with requirements in section 123 of the Atomic Energy Act of 1954, as amended (act). Under these requirements, an agreement for cooperation must provide for the consent and prior approval of the United States for

- -- retransfers of U.S.-origin nuclear materials out of EURATOM,
- -- reprocessing or alteration in the form or content of certain weapons-usable nuclear materials within EURATOM, and
- -- designation of storage facilities for certain weapons-usable nuclear materials within EURATOM.

We also examined whether the proposed agreement covers exports of U.S. sensitive nuclear technology and U.S. suspension rights under the proposed agreement.

ADOPTION OF ADVANCE LONG-TERM CONSENTS IN AGREEMENTS FOR COOPERATION

Until the mid-1980s, the United States generally entered into bilateral nuclear cooperation agreements that required request-by-request U.S. approvals for the transfer of spent U.S.-origin nuclear fuel for reprocessing and for the subsequent retransfer of separated plutonium back to a nonnuclear-weapons state. This approach changed in 1984 and 1985, when the United States entered into cooperation agreements with Sweden, Norway, and Finland, and, for the first time, used programmatic or long-term advance consents for the reprocessing of U.S.-origin nuclear material in designated facilities in England and France (both of which are nuclear-weapons states). In brief, under these 30-year agreements,

[7]The initial U.S.-EURATOM agreement was signed in 1958 and amended in 1959. An additional agreement for cooperation, signed in 1960, was amended on four occasions between 1962 and 1973. These seven documents are generally referred to collectively as "the agreement."

activities involving specified nuclear materials no longer had to receive request-by-request approvals from the United States. Rather, long-term consent for these activities was granted for the life of the agreements and could be revoked only if a cooperating nation breached its nonproliferation promises or took other actions that threatened U.S. security.

These agreements were the forerunners of the 1988 U.S.-Japan agreement,[8] which contains advance consents and approvals that are much more comprehensive than those in the three prior agreements. For example, included in the advance consents is authority for Japan to reprocess and store U.S.-origin nuclear material within Japan, to transfer spent fuel to designated facilities in Europe for reprocessing, and to retransfer the resulting plutonium back to Japan. Not only do these consents and approvals last the life of the U.S.-Japan agreement, but they also apply to facilities in Japan that did not exist when this agreement was approved.

In January 1988, the Chairman, Committee on Foreign Affairs, House of Representatives, asked us for our views on whether the advance consents and approvals in the then-proposed U.S.-Japan agreement satisfied the requirements of section 123 of the act. In our February 29, 1988, opinion to the Chairman, we noted that section 123 of the act does not require consents to be in any particular form. Our review of the act and its legislative history led us to believe that the Congress had anticipated that approvals for these activities would be provided on a request-by-request basis. Nevertheless, we found no provision in this legislation that expressly limits approvals associated with these activities to any particular process or that specifically precludes the inclusion of advance, long-term approvals for these activities in cooperation agreements. However, on the basis of an analysis of the structure of the relevant legislation, its legislative history, the specific terms of the proposed cooperation agreement and its integral implementing agreement, and facts relevant to the particular circumstances of nuclear commerce between the United States and Japan at that time, we concluded that the proposed agreement with Japan did not set forth the guaranties of consent and prior approval over retransfer and reprocessing activities required by subsections 123(a)(5) and (7) of the act.

In congressional action on the proposed agreement with Japan, the Senate Committee on Foreign Relations reported out a Senate concurrent resolution

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[8]The Agreement for Cooperation between the Government of Japan and the Government of the United States of America Concerning Peaceful Uses of Nuclear Energy was signed in 1987 and entered into force in 1988.

stating that the programmatic consent to be granted by the proposed cooperation agreement was not consistent with the act and that the President must renegotiate the draft agreement or resubmit it with an exemption of statutory requirements for affirmative action by the Congress.[9] On March 21, 1988, by a vote of 30 to 53, the Senate rejected a formal joint resolution of disapproval, and the agreement thus became effective.

In the years following the approval of the U.S.-Japan agreement, there has been considerable public discussion about the possible precedent established by the advance consent provisions of that agreement, particularly concerning the likelihood that similar provisions would be included in a new U.S.-EURATOM agreement. However, during the nearly 8 years since the U.S.-Japan agreement entered into force, the Congress has not amended the act either to prohibit or in any way to limit the use of advance consents and approvals in subsequent cooperation agreements.

Proposed Agreement Provides Advance Consent for Retransfers, Reprocessing, and Storage of U.S.-Origin Nuclear Materials

The proposed agreement with EURATOM, together with its related documents, is highly complex in both its structure and content, the result of a series of arduous negotiations between the parties.[10] Section 123 neither mandates a means of incorporating the required consents and approvals into an agreement nor requires the consents to be in any particular form. The terms "consent" and "approval" are not explicitly stated in the text of either the proposed agreement or the agreed minute that is an integral part of that agreement. The proposed agreement and agreed minute use other language of authorization, such as "may proceed," "may be made," and "may be carried out." A system of mutual consent and approval for the duration of the proposed agreement can be found by construing certain

[9]Although there was no congressional challenge to the agreements with Sweden, Norway, or Finland, three members of Congress and six public interest organizations filed suit in U.S. District Court contesting the authority of the executive branch to approve in advance the retransfer or reprocessing of spent fuel. The lawsuit was dismissed on the basis that the issue raised was a nonjusticiable political question. Cranston v. Reagan, 611 F. Supp. 247 (D.D.C. 1985).

[10]The proposed agreement has an initial term of 30 years and will continue in force thereafter for additional periods of 5 years each. Either party may terminate the proposed agreement at the end of the initial 30-year period or at the end of any subsequent 5-year period by giving the other party 6 months' written notice.

provisions of article 8 of this agreement together with related provisions of the agreed minute.

Article 8, together with the provisions of the agreed minute, describes specified nuclear fuel cycle activities, such as retransfers, reprocessing, and storage of U.S.-origin nuclear material, to be carried out by both parties under the proposed agreement as long as specified conditions continue to be met. The advance consents and approvals for the different types of activities are established in article 8 together with associated paragraphs of the agreed minute. The specific provisions of article 8 and the agreed minute are discussed more fully later in our analysis of particular requirements of section 123 of the act.

In brief, paragraph 1 of article 8 addresses advance consents and approvals for retransfers to third countries, under procedures in the agreed minute, for three different purposes. In addition to retransfers, paragraph 1 covers the enrichment of uranium, irradiation of specified nuclear material, and "postirradiation examination" within EURATOM.

Paragraph 2 of article 8 addresses advance consents and approvals for reprocessing specified nuclear materials in listed facilities within EURATOM. Procedures for making changes in these programs are spelled out in the agreed minute. Also addressed in paragraph 2 are the alteration in form or content of plutonium, uranium-233, and high enriched uranium (HEU) in designated facilities within EURATOM. The agreed minute details under what conditions the United States could suspend its approval of these activities.

Paragraph 3 of article 8 of the proposed agreement addresses advance approval of the storage, in facilities that meet specified standards, of plutonium, uranium-233, and HEU. (See table I.1 for sections in the agreement for retransfers, reprocessing, and designation of storage facilities that satisfy section 123's requirements).

Table I.1: Provisions in Agreement that Satisfy Section 123's Consent and Approval Requirements

Action	Agreement	Section 123 Provision
Retransfers	Article 8(1)(C)/ paragraphs 2-5 of agreed minute	Section 123(a)(5)
Reprocessing	Article 8(2)/ paragraphs 6-8 of agreed minute	Section 123(a)(7)
Designation of Storage Facilities	Article 8(3)	Section 123(a)(8)

Certain Requirements of Section 123 in the Proposed Agreement

Retransfers

Section 123(a)(5) of the act requires that an agreement for cooperation provide for the consent of the United States prior to the retransfer of any material transferred under the agreement beyond the jurisdiction or control of the cooperating party, in this case, EURATOM. 42 U.S.C. 2153(a)(5).[11]

The section 123(a)(5) retransfer requirement is dealt with in article 8(1)(C) of the proposed agreement (those materials that can be retransferred) and paragraphs 2 through 5 of the agreed minute (the procedures under which retransfers can take place). Article 8(1)(C) of the proposed agreement and paragraphs 2 through 5 of the agreed minute create a system governing retransfers of various categories of materials and equipment transferred under the proposed agreement, as well as of special nuclear materials produced through the use of such materials or equipment. Under this system, the cooperating parties provide each other with initial lists of the countries to which retransfers under this article may be made by the other party. Criteria of eligibility for inclusion on the list are specified in paragraph 2 of the agreed minute. Retransfers to countries not listed may be

[11]For purposes of the proposed agreement, EURATOM is considered a single party, and the provisions of the agreement apply for all member states of EURATOM. Since a retransfer is the movement of covered items to third countries outside EURATOM, the movement of such items between member states is not a retransfer and is permissible under either the act or agreement.

considered by the parties on a case-by-case basis, but advance consent is not provided by the agreement, as it is when the country is on the appropriate list.

Article 8 (1)(C) permits retransfers to third countries, "according to procedures set out in the Agreed Minute," of

> "(i) low enriched uranium, non-nuclear material, equipment and source material transferred pursuant to this Agreement or of low enriched uranium produced through the use of nuclear material or equipment transferred pursuant to this Agreement, for nuclear fuel cycle activities other than the production of HEU;
>
> "(ii) irradiated nuclear material transferred pursuant to this Agreement or irradiated nuclear material used in or produced through the use of non-nuclear material, nuclear material or equipment transferred pursuant to this Agreement, for storage or disposal not involving reprocessing;
>
> "(iii) other nuclear material transferred pursuant to this Agreement and other special fissionable material produced through the use of non-nuclear material, nuclear material or equipment transferred pursuant to this Agreement, for other fuel cycle activities including those specified in paragraphs 2 and 3 of this Article."

These subparagraphs of article 8 provide that the designated materials transferred under the proposed agreement can be retransferred according to the procedures in the agreed minute. Whether these subparagraphs constitute the required U.S. approvals for retransfers of these materials depends, therefore, on how they may be construed in conjunction with the procedures in paragraphs 2 through 5 of the agreed minute.

Paragraph 2 of the agreed minute provides that when the proposed agreement enters into force, the parties shall exchange lists of third countries to which retransfers under subparagraph (i) "may be made" by the other party.[12] For a third country to remain eligible for inclusion on these lists, it must, at a minimum, satisfy specified criteria: It must have made effective nonproliferation

[12]Paragraph 5 of the agreed minute has an exception from the requirement to be on a list for retransfers from EURATOM to Japan. These retransfers are permitted as long as the proposed agreement remains in force, provided the events described in paragraph 8 of the agreement do not occur. See the discussion of U.S. suspension rights, below.

commitments; have effective physical protection measures by being in compliance with the conditions in a specified circular; and be a party to a nuclear cooperation agreement with the United States.

Paragraph 3 of the agreed minute provides procedures for retransfers under subparagraphs (ii) and (iii). According to the participating agencies, no such retransfers are being considered at this time, and no lists will be exchanged upon the entry into force of the proposed agreement. Retransfers under subparagraphs (ii) and (iii) may be requested in the future. For retransfers under subparagraphs (ii) and (iii), EURATOM would be required to provide the United States with a list of third countries to which such retransfers may be made. For countries on this list to be included, consideration would have to be given to specified additional criteria relating to safety and nonproliferation.

Paragraph 4 of the agreed minute provides that either party may add eligible third countries to its own list at any time. After consultations, either party may delete countries from its own list but may not be do so to gain commercial advantage or to interfere with the peaceful nuclear programs of the other party. Paragraph 4 also provides that retransfers to third countries not included on the lists may be considered on a case-by-case basis. In this connection, ACDA's assessment states that the "U.S. would be required to use the subsequent arrangement procedures of section 131 of the Act for approval of such retransfers."[13]

These procedures, when construed together, establish the approved way of retransferring to third countries the several kinds of materials and equipment transferred under the agreement. Although article 8 of the proposed agreement does not use the terms "consent" or "approval," the agreed minute states that the lists of third countries are those to which retransfers "may be made" pursuant to article 8(1)(C)(i). The language that these retransfers "may be made" provides advance consent by the United States for the transfers under article 8(1)(C)(i). Under these procedures, only retransfers allowed by subparagraph (i) of article 8(1)(C) are approved in advance. Retransfers under subparagraphs (ii) and (iii) are subject to future requests and approvals, as discussed above.

Reprocessing or Alteration in Form or Content

Section 123(a)(7) of the act requires an agreement for cooperation to provide for prior U.S. approval for the cooperating party (EURATOM) to reprocess material

[13]ACDA Assessment, at II-12, H.R. Document 138, at 105.

transferred under the agreement, or material used in or produced through the use of any material or production or utilization facility so transferred. Section 123(a)(7) also requires prior U.S. approval for the enrichment or alteration in form or content of certain nuclear materials.

This requirement is also dealt with in article 8 of the proposed agreement, which, as noted above, creates the system under which the parties consent in advance to certain fuel cycle activities. Under article 8(2), each party grants the other consent to reprocess, or alter in form or content, certain nuclear material transferred under the agreement, to recover plutonium in facilities forming part of a "delineated nuclear program" as described in annex A[14] to the agreement.

Article 8(2) provides as follows:

> "The following nuclear fuel cycle activities may be carried out pursuant to this Agreement within the territorial jurisdiction of either Party in facilities forming part of the delineated peaceful nuclear programs described in Annex A:
>
> "(A) Reprocessing of nuclear material transferred pursuant to this Agreement and nuclear material used in or produced through the use of non-nuclear material, nuclear material or equipment so transferred;
>
> "(B) Alteration in form or content of plutonium, uranium 233 and high enriched uranium transferred pursuant to this Agreement or used in or produced through the use of non-nuclear material, nuclear material or equipment so transferred."

The phrase "may be carried out" provides advance consent for reprocessing and alteration in form or content, subject to the condition that the reprocessing be carried out "pursuant to this Agreement." That is, the U.S. consent to reprocessing is granted within the territorial jurisdiction of EURATOM at facilities enumerated in annex A.[15]

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[14]Annex A to article 8 contains a list of four facilities within EURATOM for reprocessing--two in France and two in the United Kingdom.

[15]Officials of ACDA and the other participating agencies with whom we spoke are confident that the United States has enough information about the EURATOM facilities (particularly about the safeguards procedures in effect) to be assured that they satisfy "applicable statutory criteria, both for new agreements for cooperation and the subsequent arrangement procedure." ACDA Assessment, at II-17, H.R.

Implementing provisions for reprocessing and alteration under article 8(2) are found in paragraphs 6 and 7 of the agreed minute. Paragraph 6 of the agreed minute allows either party to make changes to the peaceful nuclear programs delineated in annex A by notifying the other party in writing in accordance with the procedures set forth in the agreed minute and receiving a written acknowledgement. Paragraph 7 sets forth the requirements of the notification and acknowledgement, including specific confirmations with respect to safeguards arrangements and physical protection measures for a new facility. This paragraph also provides that intended changes "shall receive the fullest possible consideration during consultations under the Agreement, which may include an exchange of information and views on safeguards matters of mutual interest."[16]

These paragraphs of the agreed minute provide that although EURATOM may add future facilities to be covered by the advance consent, the United States must be given notice and an opportunity to consult, and the new facilities must be subject to safeguards and physical protection requirements. Paragraph 7(C) of the agreed minute provides that either party may delete a facility from its own delineated program by notifying the other party of the facility's name and other available relevant information.

An additional control over reprocessing and alteration in form or content is the right of the United States to suspend its consent for these activities. Paragraph 8(A) of the agreed minute gives the United States the right to suspend its consent to these activities on the basis of objective evidence that their continuation would entail a serious threat to its security or a significant increase in the risk of nuclear proliferation resulting from a situation of the same or greater degree of seriousness as would result from the situations specified on an illustrative list.[17]

Designation of Storage Facilities

Section 123(a)(8) of the act requires an agreement for cooperation to provide for advance U.S. approval of facilities for the storage of plutonium, U-233, or HEU transferred from the United States under the agreement or recovered from any

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Document 138, at 110.

[16]Agreed minute, par. 7, at 38, H.R. Document 138, at 42.

[17]See the discussion of U.S. suspension rights, below.

source or special nuclear material so transferred or from any source or special nuclear material used in any facility so transferred.[18]

This requirement is addressed in article 8(3) of the proposed agreement. Paragraph 3 of article 8 (nuclear fuel cycle activities) provides for the storage of these materials as follows:

> "3. The following nuclear materials:
>
> "(i) plutonium, uranium-233 and high enriched uranium, if not contained in irradiated nuclear fuel, transferred pursuant to this Agreement;
>
> "(ii) plutonium, uranium-233 and high enriched uranium recovered from nuclear material transferred pursuant to this Agreement;
>
> "(iii) plutonium, uranium-233 and high enriched uranium recovered from nuclear material used in equipment transferred pursuant to this Agreement
>
> "may be stored in facilities that are at all times subject, as a minimum, to the levels of physical protection that are set out in Annex C to IAEA document INFCIRC 254/Rev 1/Part 1 (guidelines for nuclear transfers) as it may be revised and accepted by the Parties and the Member States of the Community."

Article 8(3) also requires each party to identify its facilities on a list available to the other party. The list must be kept confidential upon the request of a party.

The phrase "may be stored" in facilities that meet certain requirements provides advance U.S. approval for the storage of plutonium, U-233, and HEU in any facilities that meet the required standards and are included in the required list. According to the participating agencies, EURATOM has provided the United States with the required list, and the United States "regards the list as satisfactory." EURATOM has requested, consistent with the proposed agreement, that its list be kept confidential. The United States has informed EURATOM that the United States will provide a copy of EURATOM's list on a confidential basis to the appropriate congressional committees for their information.[19] Either party

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[18]42 U.S.C. 2153(a)(8).

[19]The list of U.S. facilities is included with the materials provided to the committees with the proposed agreement.

may make changes in its list by notifying the other party in writing and receiving a written acknowledgement within 30 days after receipt of the notice.

If the requirements are not being complied with, article 8(3) sets forth procedures for specific corrective actions:

> "If there are grounds to believe that the provisions of this sub-Article are not being fully complied with, immediate consultations may be called for.
>
> "Following upon such consultations, each Party shall ensure by means of such consultations that necessary corrective measures are taken immediately. Such measures shall be sufficient to restore the levels of physical protection referred to above at the facility in question. If this proves not to be feasible, the nuclear material in question shall be transferred for storage at another appropriate, listed facility."

These provisions of article 8(3) contain few limitations on the nature or location of the facilities within EURATOM in which the specified nuclear materials can be stored. They do, however, require their listing and subsequent reciprocal written notification to and acknowledgement by the United States. The facilities also must, at a minimum, meet appropriate, internationally accepted physical protection standards established by the International Atomic Energy Agency (IAEA). Should any facility not comply with these standards, the provisions call for immediate consultation and corrective measures. Neither party has an express right to require the other to take corrective actions, but the consultation process is designed to ensure either that such actions are implemented or that the nuclear materials in question are moved to another facility.

SENSITIVE NUCLEAR TECHNOLOGY CANNOT BE TRANSFERRED UNDER THE PROPOSED AGREEMENT

Section 123 (a)(9) of the act requires an agreement for cooperation to contain a provision that all of the requirements specified in section 123(a) will be applied to any special nuclear material, production facility, or utilization facility produced or constructed by or through the use of U.S.-origin "sensitive nuclear technology" transferred under the agreement.[20]

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[20]"Sensitive nuclear technology" is defined in section 4(a)(6) of NNPA, 22 U.S.C. 3203(a)(6), as "any information (including information incorporated in a production or utilization facility or important component part thereof) which is not available to the public and which is important to the design, construction, fabrication, operation

There are no procedures established in the proposed agreement to satisfy the requirement of section 123(a)(9) because, as noted in a November 7, 1995, "side letter" to the proposed agreement covering sensitive nuclear technology and reactor technology, "the Agreement does not provide for the transfer of sensitive nuclear technology."[21] Therefore, no nuclear materials will be obtained by or through the use of U.S.-origin sensitive nuclear technology transferred under the agreement. ACDA's assessment of the proposed agreement and the President's letter transmitting the proposed agreement to the Congress also declare that the proposed agreement does not provide for transfers of sensitive nuclear technology. Additionally, ACDA asserts that "this requirement of the Act does not pertain in this case."[22]

The side letter also states that sensitive nuclear technology "may be transferred to the Community outside an agreement for cooperation pursuant to sections 127 and 128 of the U.S. Atomic Energy Act."[23] Sections 127 and 128 of the act, 42 U.S.C. 2156, 2157, provide criteria and procedures that authorize an alternative means of transferring sensitive nuclear technology to EURATOM (and nonnuclear-weapons states) outside of a cooperation agreement. The requirements in sections 127 and 128 are similar to those in section 123. According to State Department officials, any transfers of sensitive nuclear technology under sections 127 and 128 would be approved by the United States on a case-by-case basis.

PROPOSED AGREEMENT INCLUDES U.S. SUSPENSION RIGHTS

Under article 13 of the proposed agreement, the United States (or EURATOM) may suspend (or terminate) the agreement if certain circumstances occur. For example, either party may suspend the agreement if the other party materially violates its obligations under the agreement.[24] Before suspending the agreement, the United States must consult with EURATOM for the purpose of taking

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or maintenance of a uranium enrichment or nuclear fuel reprocessing facility or a facility for the production of heavy water. . . ."

[21]Side letter, No. 46, at 1, H.R. Document 138, at 79.

[22]ACDA Assessment, at II-23, H.R. Document 138, at 116.

[23]Side letter, No. 46, at 1-2, H.R. Document 138, at 79-80.

[24]Section E, paragraphs 16-18, of the agreed minute contain provisions for determining if a material violation has occurred.

corrective actions and must consider whether the facts triggering these steps were deliberate.

Also, either party may require the return of items subject to the agreement if the other party engages in certain proscribed activities, such as termination or abrogation of a safeguards agreement with IAEA. Article 13 also lists requirements that must be satisfied before either party requires the return of any items, including compensating the party against whom the right of return is invoked for the fair market value of the items to be removed and the costs of removal.

In addition to the article 13 right to suspend the entire agreement, paragraph 8(A) of the agreed minute provides procedures by which either party may suspend its advance consent to activities covered by article 8.2 (reprocessing of material subject to the proposed agreement and alteration in form or content of plutonium, U-233, and HEU). This action would suspend approvals for these activities as a whole, not just those of a particular facility. To suspend advance consent, the United States must consider on the basis of objective evidence that the continuation of these activities would entail a serious threat to its security or a significant increase in the risk of nuclear proliferation resulting from a situation of the same or greater degree of seriousness as would result from the situations specified on an illustrative list. Paragraph 8(A) describes what would constitute a "significant increase in the risk of nuclear proliferation" by reference to this list of specific situations.[25]

The agreed minute further provides that a decision by the United States to suspend advance, long-term consent can only be taken after consultations with EURATOM; by the President; and without regard to actions of third countries or events outside EURATOM unless, because of such actions or events, the activities in EURATOM itself would clearly result in a significant increase in the risk of nuclear proliferation or pose a serious threat to U.S. security. In addition, the United States must invoke suspension of these consents only in the most extreme

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[25]This list of situations includes detonation by the United States or by a nuclear-weapons member state of EURATOM of a nuclear explosive device using an item subject to the proposed agreement, the retransfer of an item subject to the proposed agreement to a nonnuclear-weapons state that has not concluded a full-scope safeguards agreement with IAEA, or the termination or abrogation of a safeguards agreement with IAEA. In addition, suspension of these consents could be triggered by acts of war, serious internal disturbances, or serious international tension constituting a threat of war.

circumstances of exceptional concern from a nonproliferation or security point of view, not for differences over EURATOM's fuel cycle choices, or to interfere with other aspects of EURATOM's civilian nuclear program--and the suspension must be applied only for the minimum time necessary to deal with the situation.[26]

Under the various provisions of the proposed agreement and the agreed minute, suspension rights are limited, particularly with respect to the criteria in article 13. It is difficult to envision the occurrence of situations that would be sufficiently serious to invoke a suspension. Nevertheless, for the first time, provisions for suspension rights are included in the proposed agreement (the previous agreement did not have suspension rights), and the decision to implement them and invoke a suspension rests respectively with the United States and EURATOM.

[26]Paragraphs 8-12 of the agreed minute.

SAFEGUARDING, TRACKING, AND PROTECTING EXPORTED NUCLEAR MATERIAL OF U.S. ORIGIN

The International Atomic Energy Agency (IAEA) is an international organization affiliated with the United Nations and has 122 member states. The agency's safeguards and promotional responsibilities are outlined in a formal statute adopted in 1956 at a conference of 81 states that were members of the United Nations or its specialized agencies. IAEA safeguards are a central element in international efforts to prevent the proliferation of nuclear weapons. Under IAEA's statute and the Treaty on the Non-Proliferation of Nuclear Weapons (treaty), IAEA is mandated to administer safeguards to detect diversions of significant quantities of nuclear material from peaceful uses. In the early 1960s, the agency established an inspection program based on a system of technical measures, referred to as safeguards, designed to detect the diversion of significant quantities of nuclear material. IAEA applies safeguards to equipment, facilities, and nuclear material. The treaty, effective in 1970, expanded IAEA's responsibilities to apply safeguards to source and fissionable nuclear material, such as enriched uranium and plutonium, that could be used to produce nuclear weapons. The treaty binds signatory nonnuclear weapons states--states that had not manufactured or detonated a nuclear device by January 1, 1967--to accept IAEA safeguards on all nuclear material, referred to as "full-scope" safeguards. All 15 members of EURATOM are treaty parties and are also members of IAEA. All nuclear activities in the nonnuclear weapon states of EURATOM are safeguarded under the IAEA-EURATOM safeguards agreement that entered into force in 1977.

Safeguarding Exported Nuclear Material of U.S. Origin

According to the State Department's Deputy Principal Director, Office of Nuclear Energy Affairs, the proposed agreement provides for a range of controls over European facilities handling U.S.-origin nuclear materials. These include requirements for IAEA and EURATOM safeguards, including IAEA safeguards on all peaceful nuclear activities in the nonnuclear weapons states of EURATOM (article 6), peaceful, nonexplosive use assurances (article 7), and physical protection measures meeting international standards for U.S.-obligated nuclear materials in facilities in EURATOM (article 11). According to the Arms Control and Disarmament Agency, the proposed agreement states that plutonium, uranium-233, and high enriched uranium may be stored in facilities that are subject, at a minimum, to the levels of physical protection that are set out in annex C to IAEA document INFCIRC 254/Rev. 1/Part 1 (guidelines for nuclear transfers). The proposed agreement also provides U.S. approval for the storage of plutonium, uranium-233, and high enriched uranium at facilities that meet the

appropriate standards for physical protection promulgated by IAEA and accepted by the United States and the international community.

In September 1993,[27] we reported on the effectiveness of IAEA's safeguards program, the adequacy of the program's funding, and the management of U.S. technical assistance for IAEA's safeguards program. Among other issues, our report noted weaknesses in the internal management of the U.S. Program of Technical Assistance to IAEA safeguards. The Department of Energy has since implemented our recommendations to improve the program's management.

Tracking Exported Nuclear Material of U.S. Origin

In December 1994, we reported on[28] how the United States tracks its exported civilian (nondefense-use) nuclear materials and ensures their physical protection. Our report noted that the United States relies primarily on a computerized system run by the Department of Energy. (At the time of our review, the system was called the Nuclear Materials Management and Safeguards System). We reported that the tracking system does not have all the information needed to track the specific current location (facility) and status of all nuclear materials of U.S. origin that are supplied to foreign countries. For example, the system does not track exported U.S. nuclear materials that are moved from facility to facility within countries, nor does it show the current status of nuclear materials (e.g., irradiated, unirradiated, fabricated, burned up, or reprocessed). Thus, the system may not contain correct data on where (at which facility) these materials are located within foreign countries or on their current status. The system does not contain this information primarily because the amounts, types, and reliability of the data contained in the system depend largely on the requirements for reporting data under international agreements for peaceful nuclear cooperation, as well as on the willingness of foreign countries and of U.S. and foreign facilities to report complete and accurate data. For example, the previous U.S. agreement for cooperation with EURATOM did not require EURATOM countries to inform the United States of retransfers of U.S.-supplied materials from one EURATOM country to another or to report alterations to U.S.-supplied nuclear materials in these countries. In addition, none of the existing agreements for cooperation require foreign countries to report intracountry transfers of U.S.-supplied materials from one facility to another. According to an official at the State Department's Office of Nuclear

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[27]Nuclear Nonproliferation and Safety: Challenges Facing the International Atomic Energy Agency (GAO/NSIAD/RCED-93-284, Sept. 22, 1993).

[28]Nuclear Nonproliferation: U.S. International Nuclear Materials Tracking Capabilities Are Limited (GAO/RCED/AIMD-95-5, Dec. 27, 1994).

Affairs, negotiations are under way to develop an administrative arrangement through which EURATOM would, among other things, annually report to the United States the amount of U.S.-origin nuclear material within EURATOM. However, this information would not show the amounts of nuclear material on a country-by-country or a facility-by-facility basis.

Protecting Exported Nuclear Material of U.S. Origin

Our December 1994 report also noted that, to ensure the physical protection of exported U.S.-supplied civilian-use nuclear materials, the United States relies on the protection systems in recipient countries, these countries' compliance with IAEA's guidelines, and U.S. evaluations of the adequacy of the recipient countries' physical protection systems (e.g., security devices and guards, etc.). Once the United States exports nuclear materials, the recipient country is responsible for adequately protecting them. While no international organization is responsible for establishing or enforcing physical protection standards, IAEA has developed guidelines for physical protection that are broadly supported by its member states. These guidelines include protection measures, such as using physical barriers along the perimeters of protected areas. The United States uses these guidelines to help evaluate whether foreign countries' physical protection systems are adequate. As a result of these evaluations, the United States may make nonbinding physical protection recommendations. The international community, including the United States, has supported states' sovereign rights and responsibilities to establish and operate physical protection systems for nuclear materials and facilities. It is also in the best interest of the sovereign states to ensure the physical protection of these materials to reduce the threat of theft or diversion.

(170265)

TESTIMONY

OF

FRED McGOLDRICK

BUREAU OF POLITICAL-MILITARY AFFAIRS
U.S. DEPARTMENT OF STATE

Thank you for the opportunity to testify before this committee on the important issue of U.S. peaceful nuclear cooperation with the European Atomic Energy Community -- EURATOM.

The United States has exported nuclear materials, equipment and technology to the member states of the European Atomic Energy Community (EURATOM) for over thirty five years. Under U.S. law, an agreement for cooperation setting forth specified terms and conditions for nuclear cooperation is required for the export of nuclear reactors and fuel to other nations or groups of nations. The U.S.-EURATOM agreement which was first concluded in 1958 and was later amended several times contained three basic non-proliferation conditions and controls. Under that agreement our European partners are required not to use U.S. nuclear materials and equipment for atomic weapons or for other military purposes, and to apply Euratom safeguards to

U.S. nuclear materials. EURATOM also agreed to obtain U.S. consent before retransferring U.S.-supplied materials or equipment to third countries outside the Community.

The U.S. Nuclear Non-Proliferation Act (NNPA) of 1978 established much more extensive and more stringent non-proliferation conditions for inclusion in new agreements for cooperation, and required the President to initiate a program to seek to update all existing agreements to include the new conditions.

We have been discussing with EURATOM the conclusion of a new agreement based on the new NNPA conditions since the early 1980s. The President submitted the proposed agreement to the Congress for its review on November 29, 1995, stating that it met all requirements of U.S. law. In approving the agreement for signature, the President has determined, as required by law, that the performance of the agreement, including the advance, long-term consent provisions, will promote, and will not constitute an unreasonable risk to, the common defense and security of the United States.

In making this determination, the President took into account the judgment of the Secretary of Energy and the Secretary of State that U.S. advance, long-term consent to

reprocessing in EURATOM will not result in a significant increase of the risk of proliferation beyond that existing at the time the approval was requested.

Under procedures specified by the Atomic Energy Act, the agreement must lie before Congress for 90 days of continuous session before it may go into effect. The old agreement expired by its terms on December 31, 1995. Hence the U.S. is not now in a position to export nuclear materials and equipment until the new agreement enters into force.

The new agreement establishes a comprehensive framework for peaceful nuclear cooperation between the United States and EURATOM based on shared nonproliferation objectives.

It contains all relevant conditions and consents required by Section 123 of the Atomic Energy Act. These include:

1. a guarantee by EURATOM that safeguards will be maintained in perpetuity on nuclear materials and equipment supplied by the United States and on special fissionable material used in or produced through such exports. This requirement is contained in Articles 6 and 14 of the new agreement.

2. a guarantee by the non-nuclear weapon states of EURATOM that all their peaceful nuclear activities will be subject to the safeguards of the International Atomic Energy Agency (IAEA), i.e., "full-scope safeguards". Article 6 of the new agreement provides for this requirement.

3. a guarantee by EURATOM that no nuclear material or equipment transferred under the agreement and no special fissionable material produced through their use will be used for research on or development of a nuclear explosive device or for any other military purpose. This requirement is contained in Article 7 of the new agreement.

4. a U.S. right to require the return of any nuclear material and equipment transferred, and any special fissionable material produced through the use thereof, if EURATOM or a member state terminates or abrogates an IAEA safeguards agreement or if EURATOM or a non-nuclear weapon member state detonates a nuclear explosive device. The right of return is set forth in Article 13.2 of the new Agreement.

5. a guarantee by EURATOM that adequate physical protection of nuclear materials will be maintained.

Physical protection assurances are contained in Article 11.

6. a U.S. right to approve the retransfer of equipment or nuclear material transferred under the agreement, or any special fissionable material produced through their use, to a third party. This consent right is found in Article 8.1 (C).

7. a U.S. right to consent to reprocessing or enrichment of U.S.-obligated nuclear material, and alteration in form or content of U.S.-obligated high-enriched uranium, plutonium and uranium-233. The consent regime for these activities is found in Articles 8.1 and 8.2. and in related provisions of the Agreed Minute.

8. a U.S. right to approve in advance facilities for the storage of plutonium, high enriched uranium and uranium-233 subject to the agreement. The consent regime for storage is found in Article 8.3.

Thus the new agreement satisfies all U.S. statutory requirements.

In addition to these requirements of law, the agreement also contains:

- a guarantee that nuclear material subject to the agreement will be subject to EURATOM safeguards; (Article 6)

- a guarantee that in the unlikely event that the IAEA or EURATOM is unable to apply safeguards, the U.S. and EURATOM will immediately establish back-up safeguards in EURATOM; (Article 6)

- a guarantee that nuclear material subject to the agreement in France and the UK will be subject to the voluntary safeguards agreements of those nuclear weapon states with the IAEA; (Article 6)

- a guarantee that all the nuclear materials subject to the previous agreements with EURATOM, Austria, Finland, Portugal, Spain and Sweden will become subject to the stringent conditions of the new U.S.-EURATOM agreement. This guarantee is a key feature of the new agreement, because it accords the United States for the first time the right to approve reprocessing and other sensitive activities involving U.S.-obligated materials that have accumulated over the last 35 years and which were subject to the previous U.S.-EURATOM agreement.

While incorporating the extensive nonproliferation conditions of the NNPA in the new agreement, the United States also sought to provide a stable basis for U.S.-EURATOM nuclear cooperation. Toward those ends the agreement provides EURATOM advance, long-term consent for specified reprocessing or alteration in form or content of certain nuclear material subject to the agreement so long as U.S. legal criteria are met, including criteria relating to safeguards and physical protection.

We have made this arrangement in recognition of EURATOM's impeccable non-proliferation credentials and the advanced, sophisticated nature of its nuclear program. We have also made it because, as a practical matter, there was no prospect of securing EURATOM's acceptance of consent rights if we had insisted on a right to exercise these new consent rights on a case-by-case basis. Europeans were extremely reluctant to accept consent rights in the new agreement and in March of 1994, they formally asked the United States to waive inclusion of consent rights. However, Secretary Christopher responded in a letter dated June 21 of the same year that the United States could not accept an agreement without the consent rights called for by the NNPA. The advance consent arrangements in the proposed U.S.-EURATOM agreement are similar to those contained

in U.S. agreements with several other cooperating partners -- agreements that were reviewed by Congress, as provided for by the NNPA, before they were brought into effect.

The agreement imposes stringent conditions respecting the activities for which this advance, long-term consent is given:

- The nuclear material involved must at all times be subject to international safeguards and physical protection satisfactory to the United States;

- If a facility is to be added to the European delineated program to which long-term advance consent applies, EURATOM must provide the U.S. with assurances and information on the safeguards and physical protection arrangements for the facility.

The U.S. may also suspend its advance, long-term approvals with respect to the delineated program of EURATOM if it determines that their continuation would result in a significant increase of the risk of nuclear proliferation or in a threat to the national security. Thus the long-term, advance consent arrangement is neither a blanket approval, nor is it irrevocable.

Some have criticized the Administration for taking the advance, long-term consent approach with EURATOM. It is important to understand the consequences had we not done so: There would be no Agreement, and consequently no U.S. consent rights over the reprocessing, alteration, and storage of 35 years' worth of U.S.-origin plutonium and other sensitive nuclear materials already in EURATOM. The old Agreement is no help in this regard. It is not as though defeat of this Agreement, with its advance, long-term approval features, will enable us to control (some would hope, to veto) these EURATOM activities on a case-by-case basis. Not at all. Defeat of this Agreement will simply leave us with no consent rights whatsoever over these activities in EURATOM.

The new agreement advances the economic, political and nonproliferation interests of the United States.

The new agreement is legally necessary for the export of U.S. nuclear materials and equipment to EURATOM. Without the agreement the United States Enrichment Corporation (USEC) could lose sales approaching $2 billion over the next 10 years. This would comprise two elements -- the loss of existing sales commitments and the loss of new sales opportunities.

The U.S. has a small but growing share of the existing European market in enrichment services. Existing European sales commitments worth approximately $0.5 billion would be threatened if the new agreement did not enter into force. In addition, USEC would lose about $0.8 billion in new sales that it expects to capture in the European market out of a total market of $10 billion over the next 10 years. The absence of an agreement could also cause the loss of $0.7 billion in new sales in Asia (mostly to Japan), since Japan wants to keep open the option of having its fuel reprocessed in Europe, an option which would be foreclosed if the U.S.-EURATOM agreement is not renewed.

The new agreement with EURATOM is also important for implementing the agreement between Russia and the U.S. to purchase low enriched uranium from 500 tonnes of high enriched uranium from dismantled Russian nuclear weapons. As the U.S. government agent for executing this agreement, USEC will need the European market to sell this material.

Politically, failure to renew the agreement would constitute a serious setback to U.S.-European relations and to the Atlantic Alliance which has so effectively served the interests of both the United States and Western Europe over the

last five decades. It would undermine a crucial area of trust and cooperation between close allies and friends. The new agreement is essential to reaffirm and strengthen our relations with our allies at a time when new challenges threaten global security in the post-Cold War world.

The agreement is also critical to effective cooperation with our European allies to preserve and strengthen the nuclear nonproliferation regime. The new agreement itself greatly expands U.S. nonproliferation controls. As I have noted, the old U.S.-EURATOM agreement contained only three assurances--no military use, safeguards, and a guarantee that no U.S.-obligated materials and equipment would be retransferred outside of EURATOM without U.S. approval. The new U.S.-EURATOM agreement provides all the guarantees and controls required by the NNPA for new agreements including full-scope safeguards, safeguards in perpetuity, peaceful, non-explosive use assurances, physical protection guarantees and a range of U.S. consent rights over retransfers, reprocessing, enrichment, alteration in form or content and storage of weapons-usable materials.

The nonproliferation implications of this agreement, however, go beyond the controls and conditions in the agreement itself. U.S.-European collaboration was essential in

establishing all aspects of the existing international nonproliferation system, including the IAEA and its safeguards system, the Nuclear Suppliers Guidelines, the Zangger Committee, the Physical Protection Convention and, most recently, the indefinite extension of the Treaty on the Non-Proliferation of Nuclear Weapons (NPT).

U.S.-European cooperation will be equally vital to meeting the nonproliferation challenges ahead, including the negotiation of a comprehensive test ban treaty and a fissile material cutoff treaty, the strengthening of IAEA safeguards, and the establishment of effective cooperation to prevent nuclear smuggling.

The continued close collaboration of the United States and the European Union in all these areas will play a key part in strengthening an international regime which will promote the benefits of peaceful nuclear energy and at the same time reduce the risks of nuclear weapons proliferation to an absolute minimum.

The new agreement provides the foundation upon which this collaboration will take place. This agreement is in our mutual interest, and I strongly recommend favorable congressional review.

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Statement of
Terry R. Lash, Director
U.S. Department of Energy
Office of Nuclear Energy, Science and Technology

before the

United States Senate
Committee on Government Operations

February 28, 1996

Mr. Chairman and members of the Committee on Government Operations, I am Terry Lash, Director of the DOE Office of Nuclear Energy, Science and Technology. I am pleased to appear before you today to discuss the United States-European Atomic Energy Community (EURATOM) Agreement for peaceful nuclear cooperation.

On behalf of Secretary O'Leary, I am here today to state that the Department of Energy believes that the Agreement for Cooperation which was signed on November 7 of last year represents a significant and mutually beneficial step forward in the evolution of the U.S.'s security, commercial, and technological relationships with the European Union. This agreement allows important trade relationships to continue and expand in a manner that complies with the requirements of U.S. law and advances U.S. national security interests.

It is difficult to overstate the importance of this agreement to U.S. interests abroad. It is a matter of vital concern to some of our closest allies in the world (EURATOM countries include 11 of our 15 NATO partners), and provides a vitally important indication that assuring the

nonproliferation of weapons-usable materials and technologies is not inconsistent with commerce in civilian nuclear energy technologies, products, and services. Beyond the importance to U.S. industry doing business in Europe and elsewhere, the success of this Agreement will be an important symbol to other nations of the world that have an interest in establishing nuclear trade relationships with the United States that advances in nuclear commerce and assuring nonproliferation can move forward together. Moreover, the close cooperation of the U.S. and Europe is essential if we are to jointly address the complex nuclear safety challenges associated with the operation of Soviet-era nuclear power plants in Central and Eastern Europe and the Former Soviet Union. All of these interests, and many others, would be substantially harmed if this agreement is not implemented.

The Benefits of U.S.-EURATOM Cooperation

The U.S.-EURATOM relationship begin to yield important results soon after EURATOM was established by the Treaty of Rome in 1957. The following year marked the beginning of U.S.-EURATOM cooperation in the peaceful uses of atomic energy, with the conclusion of an agreement pursuant to Section 123 of the Atomic Energy Act. The 1958 agreement, substantially amended in 1960 and 1973, remained in force until it expired on December 31, 1995. The proposed new U.S.-EURATOM Agreement has been negotiated to replace the expired Agreement.

Cooperation between the U.S. and EURATOM over the past four decades has been extensive and mutually beneficial. Among the earliest areas of cooperation were the establishment of EURATOM's system of safeguards for control of nuclear materials, and the construction and further improvement of nuclear power plants based upon U.S.-developed light water reactor technology.

Today, as in the United States, nuclear energy is an important component of the energy mix of the EURATOM countries. Indeed, in some EURATOM member states it is the predominant source of electrical energy. Europe's 130 nuclear power plants--which are mostly light-water reactors based on U.S. technology--provide EURATOM countries with a nuclear-generated electricity capacity that is slightly higher than that of the United States.

Moreover, EURATOM countries have developed sophisticated, well-established nuclear industries comprising the complete range of manufacturing, servicing, training, and the other functions needed to support and expand their nuclear power programs. The Department of Energy and its predecessors, along with the U.S. nuclear industry, contributed in no small measure to the impressive achievements of EURATOM and its member states in nuclear power and in other peaceful applications of nuclear energy in industry, medicine, and agriculture.

Past exchanges of operational experience plus cooperation in safety research facilitated by the EURATOM Agreement have resulted in a shared U.S.-EURATOM technology infrastructure and safety culture that has the highest standards in the world. Continued cooperation based on a

renewed agreement that facilitates mutual exchange of safety research, operational data, and regulatory approaches will ensure that western light water reactor technology continues to be safe, scientifically advanced and proliferation resistant. This cooperation will become even more vital in the decades ahead as the center of nuclear power plant construction continues to shift from the U.S. and Europe toward Asia.

Cooperation among states that rely on nuclear power as part of their energy supply is an essential component of preventing the proliferation of nuclear materials. Over the years, the United States and the member states of EURATOM have worked closely to strengthen the global nonproliferation regime. This proposed Agreement for Cooperation will ensure that this cooperative atmosphere continues into the future as one of our most effective tools in preventing the proliferation of nuclear weapons.

The need to maintain open trade between the U.S. and the European Union is as important today as it was in 1958. While it is true that Europe's nuclear industries are far more independent than they were thirty years ago, U.S. business is looking forward to a new era of competitiveness in Europe. A privatized U. S. Enrichment Corporation is expected to be a formidable competitor in Europe in the coming years and U.S. advanced light water reactor technology is of considerable interest in Europe--nine EURATOM countries currently participate in the advanced light water reactor development program the Department of Energy conducts in cooperation with industry.

If these links are important where we agree with EURATOM countries, they are even more

important where we disagree. For example, nuclear trade made possible through agreements such as that proposed acts as a motivating factor to continued cooperation among nations that hold differing views of the nuclear fuel cycle with respect to reprocessing of irradiated nuclear fuel. Without such an agreement, the United States could find itself isolated from the European Union, with little influence on, or input to, the nuclear activities of the member states of EURATOM.

The Road to the New Agreement

Historically, the member states of EURATOM have worked with the United States to strengthen the nuclear nonproliferation regime in such fora as the International Atomic Energy Agency, the Nuclear Suppliers Group, and the Zangger Committee. Most recently they strongly supported the indefinite extension of the Treaty on the Non-Proliferation of Nuclear Weapons. That history of cooperation both in the peaceful applications of nuclear technology and in preventing the proliferation of nuclear weapons-usable materials and technology has enabled every U.S. President since February 1980 to determine, in accordance with the Nuclear Non-Proliferation Act of 1978 (the NNPA), that cooperation with EURATOM could continue under the agreement predating enactment of the NNPA, despite the fact that the now-expired Agreement did not satisfy all of the requirements laid down in the NNPA.

The expired U.S.-EURATOM Agreement for Cooperation satisfied several important requirements of the NNPA (*e.g.*, it required the application of safeguards and U.S. consent to transfer U.S.-supplied material and equipment to countries outside of the Community and clearly

precluded the use of U.S -supplied material and equipment for nuclear weapons or any military purposes). However, it failed to grant the United States the right of prior approval for reprocessing or alteration in form or content of nuclear material supplied by the U.S. or special nuclear material used in or produced through the use of such equipment or material. It also failed to provide the United States the right to approve storage arrangements for weapons-usable material. It was a primary task of U.S. negotiators to address these deficiencies.

Discussions on renegotiating the existing U.S.-EURATOM agreement to make it conform to the requirements of the NNPA began in the early 1980's. The Department of Energy assisted the Department of State in these negotiations. Throughout those discussions, EURATOM was advised of the controls and conditions required by the NNPA for agreements for cooperation, and that the Administration was not prepared to submit to Congress an agreement that waives any requirement of U.S. law. For its part, EURATOM resisted inclusion of consent rights, other than the retransfer consent rights on the bases that:

(1) the extent of nuclear activities in their member states made EURATOM an equal partner with the U.S. in the peaceful uses of nuclear energy,

(2) EURATOM's nonproliferation credentials are no less valid than those of the U.S., and

(3) such consent rights were intrusive.

In order to address these concerns the Administration (and its predecessors) offered to grant consent rights on a programmatic, long-term basis over the life of the agreement. U.S.

negotiators emphasized that the consent rights are reasonable and completely reciprocal and should not pose any major difficulties to cooperation under the agreement, especially in light of the statement by the White House in September 1993 that the U.S. will maintain its existing commitments regarding the use of plutonium in civil nuclear programs in Western Europe and Japan.

The U.S. need to obtain consent rights for reprocessing and other such activities was addressed in Article eight of the Agreement and related portions of the Agreed Minute (which constitutes an integral part of the Agreement). This part of the Agreement provides to the European Atomic Energy Community advance, long-term approval for specified enrichment, retransfers, reprocessing, alteration in form or content, irradiation, post-irradiation examination, and storage of specified nuclear material, and for retransfers of non-nuclear material and equipment. This represents a significant change from the expired Agreement. In the proposed Agreement, the United States grants approval to EURATOM for reprocessing and subsequent retransfer of the separated plutonium to a non-nuclear weapons state. However, this approval may be suspended if either activity ceases to meet the criteria set out in U.S. law, including criteria relating to safeguards and physical protection. With respects to the advanced consent arrangement for reprocessing and subsequent retransfer the Secretary has determined that the proposed Agreement will not result in a significant increase in the risk of proliferation beyond that which exists now, or which existed at the time approval was requested.

These advance consent arrangements would constitute "subsequent arrangements" under section

131 of the Atomic Energy Act if agreed to separately from the Agreement for Cooperation. Therefore, these consents are fully reviewed against the statutory criteria of section 131 in the analysis that accompanies the Agreement. Through that analysis, the Secretary of Energy has determined that all the advance consent arrangements contained in the proposed Agreement will not be inimical to the common defense and security of the United States.

In reaching this determination, the Secretary has given foremost consideration to whether or not these activities will take place under conditions that will ensure timely warning to the United States of any diversion well in advance of the time at which a non-nuclear weapon state could transform the diverted material into a nuclear explosive device.

This judgment is supported by many factors, including those demonstrating the commitment of EURATOM to the application of effective, comprehensive safeguards in the European Union not only by the International Atomic Energy Agency under the treaty on the Non-Proliferation of Nuclear Weapons, but also by the regional safeguards system established by EURATOM. The Secretary's determination is also supported by the strong nonproliferation credentials of the European Union and its member states, their adherence to the Treaty on the Non-Proliferation of Nuclear Weapons, their lack of incentives to acquire nuclear explosive devices, the close technical and economic ties between member states, and the intimate and important relationships that the United States has with the European Atomic Energy Community and each of its member states. It should be noted that the Agreement does not contain any new authorizations for retransfers of plutonium or other sensitive nuclear materials. Nevertheless, paragraph five of the Agreed Minute

does reaffirm the provisions of the U.S.-European Atomic Energy Community Exchange of Notes of July 18, 1988, approving retransfers of plutonium to Japan on an advance, long-term basis.

The Department is also confident that the Agreement adequately addresses the potential expansion of the European Union to include Central Europe's emerging democracies. For any facilities added to the Agreement in the future, the Agreement specifies strict requirements for nonproliferation safeguards and requires inspections by the International Atomic Energy Agency (IAEA) and EURATOM. In addition, countries such as the Czech Republic and Hungary that may someday join EURATOM already possess excellent nonproliferation credentials, are parties to the Treaty on the Non-Proliferation of Nuclear Weapons and are members in good standing of the Zangger Committee and the Nuclear Suppliers Group. Rather than a matter of concern, the Department finds the ability of the Agreement to include these new democracies as an opportunity for the U.S. to positively influence their future practices and encourage them to maintain the excellent nonproliferation records they have garnered thus far.

The advance long-term approvals reflect Administration policies aimed at improving the climate of cooperation with, and providing greater certainty for, the civil nuclear programs of countries and groups of countries with unquestioned nuclear nonproliferation credentials. The European Atomic Energy Community member states and the European Union itself have long been among the strongest supporters of nuclear nonproliferation efforts worldwide. The proposed exchange of side letters on nuclear nonproliferation policies, included with the text of the Agreement at Attachment three, sets forth in detail the U.S.-EURATOM shared nonproliferation views.

Conclusion

To remain technically competent and help maintain a domestic nuclear option, the U.S. nuclear industry must be allowed to continue to compete in the European nuclear power market. The proposed Agreement is essential for achieving this purpose. Moreover, continued cooperation with EURATOM is critical to our international nuclear safety initiatives. Accordingly, the Department believes that the proposed new Agreement provides an updated comprehensive framework for peaceful nuclear cooperation between the United States and the European Atomic Energy Community, seeks to facilitate such cooperation, and provides for strengthened controls reflecting the shared strong commitment to nuclear nonproliferation of the parties. Among the benefits we expect to accrue to the United States from entry into the Agreement are the following:

- It will strengthen the international nuclear non-proliferation regime, support of which is a fundamental objective of U.S. national security and foreign policy, by setting a high standard for rigorous non-proliferation conditions and controls.

- The Agreement contains all the consent rights and guarantees required by U.S. law, substantially upgrading U.S. controls over items subject to the current Agreement as well as future cooperation.

- It confirms the U.S. intention to be a reliable nuclear trading partner. Thus,

helping ensure the continuation and possible growth of U.S. civil nuclear exports to the countries of the European Atomic Energy Community.

In summary, the proposed Agreement, and the advance consent rights contained therein, allow continued trade in nuclear materials and equipment while assuring achievement of the national security and nonproliferation goals of the United States. We recommend that this Agreement for Cooperation be quickly ratified and implemented.

Prepared Statement of
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U.S. Arms Control and Disarmament Agency

Committee on Governmental Affairs - U.S. Senate
Proposed U.S.- Euratom Agreement for Cooperation
February 28, 1996

I appreciate the opportunity to participate in this hearing on the proposed U.S.-Euratom Agreement for Cooperation. Section 123 a. of the Atomic Energy Act accords to the Arms Control and Disarmament Agency (ACDA) an important role in such agreements. In particular, the State Department must consult with ACDA during the negotiating phase and prior to approval of these agreements, the Director of ACDA provides Views and Recommendations and an unclassified Nuclear Proliferation Assessment Statement to the President. The assessment statement is to analyze (i) the consistency of the agreement with statutory requirements and (ii) the adequacy of the agreement to ensure that any assistance will not be used for military or nuclear explosive purposes.

With regard to the specific standards set forth in the law for the assessment statement, it is ACDA's view that the proposed agreement with Euratom meets all statutory requirements and that its terms are adequate to ensure against diversion to proscribed uses. The ACDA assessment goes beyond these strict legal requirements, and concludes that the agreement promotes the broad nonproliferation interests of the United States. These factors led the Director of ACDA to recommend to the President on September 8, 1995, that he approve the agreement. Let me provide a brief overview of the major points in favor of this agreement.

First, the maintenance of a predictable and long-term framework for civil nuclear cooperation between the United States and Euratom strongly serves the political and security interests of the United States; very specifically, it provides an important foundation for continued, close cooperation with Euratom members on nuclear nonproliferation issues of critical interest to the United States such as the NPT, nuclear export controls, and IAEA safeguards. The joint U.S.- European Union Declaration on Nonproliferation Policy issued when the agreement was signed reinforced our mutual support for such measures. The old agreement expired on December 31, 1995, and this new agreement will continue the tradition of civil nuclear cooperation that began in 1958.

Second, while the language pertaining to consent rights is different from that found in other such agreements, we find it fully satisfactory. We arrived at that conclusion based on a careful analysis of the text in comparison to the requirements set forth in Section 123 a. of the Atomic Energy Act for all new or amended agreements for cooperation. We note also that advance consent arrangements are clearly permitted by the Atomic Energy Act and that such arrangements were included in agreements for cooperation reviewed by the Congress in the 1980s for Sweden, Norway, Finland, and Japan.

Third, entry-into-force of this agreement will result in a significant expansion of U.S. controls beyond those contained in the recently expired agreement. In particular, the old

agreement was limited to provisions on peaceful use, safeguards, and no retransfer without U.S. consent. In contrast, the new agreement includes, in addition to these guarantees, U.S. consent rights over reprocessing, enrichment, alteration in form or content, and storage of weapons-usable material. We are confident that U.S. nuclear nonproliferation and other national security interests are protected through the provisions allowing suspension of the U.S. consent for reprocessing and other activities.

Fourth, the nuclear nonproliferation commitments of Euratom member-states, the long-term stability of their political systems, their long association with the United States including 11 of the 15 in NATO, and the added guarantee of the Euratom safeguards system, all combine to offer a very high degree of confidence in the reliability of the peaceful use assurances contained in the agreement. We have no reason whatever to doubt that existing Euratom members will ensure that any new members share the same degree of commitment to and acceptance of nuclear nonproliferation norms and practices -- including effective nuclear material accounting and control systems and responsible export controls.

Fifth, the agreement helps to fulfill the U.S. obligation under Article IV of the NPT to engage in civil nuclear cooperation with other NPT parties in a manner that furthers the objectives of the Treaty. Unfettered cooperation in this area is particularly important to Euratom members because they rely on nuclear power for approximately 35% of their electricity production -- in France the figure is 75%. This new agreement should help to promote a stable civil nuclear

supply relationship between the United States and Euratom for at least 30 years.

Sixth, the members of Euratom are strong supporters of all important elements of the nuclear nonproliferation regime. Euratom states are members of the NPT, the IAEA, the Nuclear Suppliers Group, the Zangger or NPT Exporters Committee, and the Physical Protection Convention. Moreover, in recent years, close collaboration with Euratom members has contributed to strengthening the regime in several important respects. It was instrumental in achieving the indefinite extension of the NPT, expanding the coverage and enhancing the effectiveness of IAEA safeguards, and improving the Nuclear Suppliers Guidelines by adoption of controls on nuclear dual-use items and of full-scope IAEA safeguards as a condition of nuclear supply to non-nuclear-weapon states. This collaboration has also led to support for U.S. nonproliferation initiatives in key regions such as South Asia, the U.S.-DPRK Agreed Framework, and the Middle East including avoiding civil nuclear cooperation with Iran.

Finally, another important factor that ACDA considered, in making its positive recommendation on the agreement, is the relationship of this agreement to the Administration's concerns about the security and stockpiling of civil plutonium. One primary benefit of the agreement is that it will bring a large quantity of plutonium and highly enriched uranium under U.S. consent rights for the first time, and thus will help maintain and promote the highest possible standards for the security of such weapons-usable material. This is an important advance over the current situation.

While it is Administration policy not to encourage reprocessing anywhere, there is essentially no effective way to use U.S. consent rights in this agreement for cooperation as a means to influence European fuel cycle policies. Exercising consent rights in the agreement on a case-by-case basis would not have provided Euratom with the assurances it sought for stability and predictability over the lifetime of the agreement. It was clear that there would have been no agreement without a U.S. willingness to extend to Euratom the same long-term consent arrangements provided to Japan. Had there been no agreement, Euratom would have continued to reprocess in any event; and we would have lost the opportunity to obtain new controls on sensitive nuclear fuel cycle activities in Euratom where U.S.-controlled nuclear material is present. It was this reasoning that underlay the Administration's decision to offer long-term consent to Euratom in view of the advanced nature of the civil nuclear programs in Euratom and the commitment of its members to comprehensive nonproliferation undertakings.

It should be noted that some members of Euratom, together with Japan, Switzerland, Russia, China, and the United States have been engaged since 1994 in an effort to consider voluntary guidelines related to the transparency and security of stockpiles of civil plutonium. The Administration's view is that this exercise should also deal with ways to limit and ultimately reduce these stockpiles. It is too early to assess the prospects for the success of this undertaking. While all participants understand the importance of transparency and of reassuring the public that the best possible security measures are being applied to stockpiles of plutonium, there is not as much agreement on finding ways to limit these stockpiles. This is not surprising as each country

believes that its domestic nuclear energy policies are sovereign matters and many other countries have a different view about the degree of proliferation risk associated with stockpiles of civil plutonium. I mention this initiative to underscore that the Administration continues seeking ways to limit civil reprocessing consistent with nonproliferation and energy security requirements. Entry-into-force of the new agreement should serve to further strengthen cooperation with key Euratom states in this area.

Before closing, let me say a few words about IAEA safeguards under the agreement. We are satisfied that the United States is able to make an informed judgment about the adequacy of IAEA safeguards to be applied to U.S.-obligated nuclear material in Euratom including separated plutonium. United States and Euratom safeguards officials have engaged in regular consultations for many years. These exchanges have allowed the United States to acquire much information about the operation of IAEA safeguards in Euratom and to have high confidence in the ability of the IAEA to take independent measurements and otherwise evaluate nuclear material subject to Euratom safeguards.

In conclusion, the entry into force of this agreement will serve important foreign policy and national security interests of the United States with particular emphasis on civil nuclear cooperation and nuclear nonproliferation matters. It fully conforms with statutory requirements and will strengthen cooperation between the United States and Euratom members to ensure effective controls on plutonium and highly enriched uranium. And it helps to reinforce our long history of cooperation on the NPT, IAEA safeguards, nuclear export controls and other important elements of the nuclear nonproliferation regime. I urge favorable Congressional review of this agreement. Thank you.

Department of Energy
Washington, DC 20585
March 4, 1996

The Honorable Ted Stevens
Chairman
Committee on Governmental Affairs
United States Senate
Washington, DC 20510

Dear Mr. Chairman:

The Department of Energy appreciates the opportunity to provide the Committee on Governmental Affairs with its views regarding the Nuclear Materials Management and Safeguards System (NMMSS) and the U.S.-EURATOM Agreement for Peaceful Nuclear Cooperation. The Department's activity to develop and implement an updated NMMSS arose as an area of concern during the Committee's hearing of February 28 on the Agreement. As I indicated during the hearing, we are now providing you with our views on this subject.

The Department recognizes the importance of assuring the effectiveness of the NMMSS and takes very seriously all comments made by the General Accounting Office (GAO) during the hearing and in its reports regarding the development of an updated NMMSS. The Department is working at this time to develop a detailed response to GAO's critique of the NMMSS program. We will provide the Committee with a copy of this response as soon as it is approved by the Secretary. The purpose of this letter is to provide the Committee with the Department's views on the relationship between the NMMSS and the U.S.-EURATOM Agreement.

While the Department recognizes that an effective NMMSS plays an important role in the U.S. effort to manage information about the location, quantities, and condition of fissile materials, this system (and others like it operated by the International Atomic Energy Agency and the EURATOM Safeguards Directorate[1]) is only a part of the international strategy to assure the security of fissile materials. Tracking systems are databases used to collect, organize, and report on data provided by facilities that handle, process, store, or transport fissile materials. These systems provide no assurance about the location and condition of fissile materials.

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[1] *The proposed U.S.-EURATOM Agreement requires reporting of U.S.-origin nuclear material exported to and imported from EURATOM member nations. The Treaty of Rome requires that all nuclear material inventories and transfers within EURATOM be reported to the multinational EURATOM Safeguards Directorate for tracking purposes. Further, the EURATOM/IAEA International Safeguards Agreement requires EURATOM to report all inventories and transfers of fissile materials to the IAEA Safeguards Department for tracking purposes.*

In Europe, this assurance is provided by the onsite monitoring and inspections conducted by both EURATOM and the IAEA to verify nuclear material inventories against the facility records and national reports. Facility inspections for plutonium (similar in nature to the first IAEA inspections that uncovered violations in North Korea) normally occur on approximately a monthly basis and consist of the following activities:

- Onsite auditing of facility records against facility and national reports and information obtained independently by onsite inspectors;
- Random sampling of containers, including the use of nondestructive analyses (*e.g.*, the use of radiation detectors) and destructive analyses. Destructive analyses include chemical analysis of samples which is performed at a network of independent laboratories;
- Placing seals on containers to assure their integrity (in Europe, many containers will, in fact, have multiple seals placed on them by various parties to independently assure the security of fissile materials); and
- Placing and maintaining monitoring cameras in storage areas.

The Department is confident that the inspection regime applied by these organizations provides assurance that U.S.-origin fissile materials will not fall into the wrong hands.

U.S.-origin material constitutes only approximately thirty percent of the plutonium existing in the world's civilian spent fuel and in inventories as separated plutonium. Even if all U.S. material were removed from Europe, a monitoring and inspections activity would continue to be required to assure that nuclear materials were adequately safeguarded and secured.

The Department does not believe that issues associated with the Department's NMMSS (which was originally instituted to meet legal requirements to track nuclear materials in the United States) should be a key element in the Senate's consideration of the U.S.-EURATOM Agreement for Cooperation. Any unresolved issues related to the development of the NMMSS could be addressed through other vehicles. The Department would like to work with you in addressing this issue. If you require information regarding the development of the new NMMSS before the Department's response to GAO is issued, you may wish to contact Joan Rohlfing, Director of the Office of Nonproliferation and National Security.

Once again, we appreciate this opportunity to provide you with our views on this important subject. Please contact us at any time if you require additional information.

Sincerely,

Terry R. Lash

Terry R. Lash, Director
Office of Nuclear Energy,
Science and Technology

copy: The Honorable John Glenn
Ranking Minority Member

Department of Energy
Washington, DC 20585

MAR 13 1996

MAR 1 2

The Honorable Ted Stevens
Chairman
Committee on Governmental Affairs
United States Senate
Washington, D.C. 20510

Dear Mr. Chairman:

In his March 4, 1996, letter to you, Dr. Terry Lash, Director of the Office of Nuclear Energy, Science and Technology, provided Department of Energy views regarding the relationship between the proposed U.S.-EURATOM Agreement and the Department's Nuclear Materials Management and Safeguards System (NMMSS). Dr. Lash also indicated that additional information would be provided by the Office of Nonproliferation and National Security. We are pleased to provide information about progress of the transition of the NMMSS from Oak Ridge National Laboratory (operated by Lockheed Martin Energy Systems) to Nuclear Assurance Corporation (NAC) International . We will provide the Committee with a copy of the Department's detailed response to the General Accounting Office (GAO) as soon as it is approved by the Secretary.

Oak Ridge successfully operated the NMMSS for over a quarter century. The computer equipment, however, was no longer cost effective to maintain. Given the need to provide a replacement system, the Department reviewed options to convert the old system to one using modern database management system technology to improve operational efficiency, reduce costs, increase speed of response to system users, and provide flexibility for possible future modification to meet user requirements. A change in location for the system followed from a cost benefit analysis. NAC International was selected as the new manager of the system because, like Oak Ridge, it has unique nuclear expertise and many years experience managing "Fuel-Trac" (a nuclear fuel cycle database for commercial users). In addition, this decision allowed the Department to take advantage of the efficiencies gained by having NAC International operate the tracking system for U.S.-origin nuclear materials, which is similar to the work NAC International has been doing for the Department for the past two decades tracking non-U S.-origin nuclear fuels.

The General Accounting Office's recommendation to terminate the development of the replacement system was not ignored. We reviewed the findings and informed the General Accounting Office that we are confident that ongoing actions will meet, and eventually exceed, U.S. Government requirements. The Department has taken program management actions to help ensure the transition is successful, such as improved customer interaction.

As reflected in the Department's response dated June 28, 1995, to the General Accounting Office's draft report, there were a number of specific points upon which the Department disagreed. However, the Department proceeded with transition to the new system only after concluding that the General Accounting Office's concerns were adequately addressed.

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The General Accounting Office's final report includes the Department's comments as an appendix. Our comments essentially remain the same. The new system was tested in August 1995, using a formal test plan written by NAC International, approved by Lawrence Livermore National Laboratory, and independently witnessed by a Technical Advisory Committee to assure that all System Requirements Specifications were met. The new system became the U.S. Government's system of record on September 1, 1995. We agree that a complete set of system development documentation did not exist. We have moved to rectify this with the establishment of a project management plan, a software quality assurance plan, and a software configuration management plan. Additionally, not all reports have been coded and tested. Completion of the remaining primary reports will be completed by the end of March, 1996, and their subsequent testing will be completed by the end of April. We are confident that these actions, when completed, will exceed U.S. Government requirements.

If you have further questions, please contact me or have one of your staff contact Dr. Kenneth Sanders on 202-586-7592.

Sincerely,

Joan B. Rohlfing

Joan B. Rohlfing, Director
Office of Nonproliferation
and National Security

copy: The Honorable John Glenn
Ranking Minority Member

Question for the Record submitted to Fred McGoldrick
Committee on Governmental Affairs
February 28, 1996

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1. NPT historian Mohammed Shaker and U.S. NPT negotiator George Bunn have separately written that in 1965, at the urging of the State Department and Euratom, the U.S. proposed that the safeguards article of the NPT should provide for "the application of International Atomic Energy Agency or equivalent international safeguards." The "or equivalent" clause was soon withdrawn, however, in the face of strong international opposition. Moreover, the Executive Branch has acknowledged in a legal memorandum it submitted during congressional consideration of the US/China Agreement, that section 123(a)(2) of the Atomic Energy Act (hereinafter, "the Act") "specifically requires 'IAEA safeguards' [and that] "where Congress intended a section in the law specifically to require IAEA safeguards, it so provided. Similarly, where the equivalent of IAEA safeguards could satisfy a provision of law, Congress so specified." (Memorandum dated 8/30/85). Internationally, the U.S. has aggressively defended the requirement for IAEA safeguards, both in the Nuclear Supplier Group and most recently in the context of the indefinite extension of the NPT. Given this history, and given that the Act specifically requires IAEA safeguards, on what legal authority can cooperation continue on the basis of "equivalent" safeguards as provided in the Agreement (Art, 6(3)(b) and (c) and Art. 6(4)?

ANSWER: Article 6 of the proposed US-Euratom agreement for peaceful nuclear cooperation requires the application of IAEA safeguards to U.S. obligated nuclear material pursuant to the agreement between the Community, its non-nuclear weapon Member States and the IAEA. (See paragraphs 1(a) and 2(A) of Article 6.) This provision satisfies the safeguards requirements for peaceful nuclear cooperation agreements as set forth in Section 123.a.2 of the Atomic Energy Act as well as the safeguards requirements for licensing as set forth in Sections 127 and 128. Article 6 also requires the application of Euratom safeguards.

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The U.S. has incorporated in its peaceful nuclear cooperation agreements a provision for so-called "fallback safeguards". The U.S. adopted this long-standing policy as a precaution in the highly unlikely event that the IAEA safeguards were not being applied in the future for any reason.

This practice is continued in the U.S-Euratom agreement in a three staged approach. Paragraph 3(a) of Article 6 provides that if the NPT safeguards agreement between the Community, its non-nuclear weapon states and the IAEA is not being applied, the Community is obliged to enter into another agreement or agreements with the IAEA which provide for the application of safeguards which provide for effectiveness and coverage equivalent to that provided by the NPT safeguards agreement. Thus the first stage of "equivalent" effectiveness and coverage would still be through the IAEA.

In the still more unlikely event that an IAEA safeguards agreement called for in paragraph 3(a) of Article 6 is not possible, then the Community is obliged to apply Euratom safeguards of equivalent effectiveness and coverage. If this is not possible, paragraph 3(c) of Article 6 requires that the U.S. and Euratom immediately to establish safeguards arrangements which provide for equivalent effectiveness and coverage to the NPT safeguards agreement specified in paragraph 1(a) of Article 6.

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Similar provisions for fallback safeguards are found in all our agreements. (Other agreements do not, of course, provide for Euratom safeguards.) The point of fall-back safeguards is to protect U.S. national security interests by ensuring that either IAEA safeguards or some system of equivalent coverage and effectiveness will always be applied to U.S.-origin nuclear material. It is not necessarily to permit cooperation to continue, because in fact U.S. law requires IAEA as a condition of nuclear exports. (See Sections 127 and 128 of the Atomic Energy Act.) In the highly unlikely event that the IAEA is not applying safeguards pursuant to a full-scope safeguards agreement, U.S. exports of nuclear material and equipment would not be permissible under U.S. law. We consider it highly improbable that the IAEA would not be applying safeguards in accordance with the NPT safeguards agreement with the Community and its non-nuclear weapons state members. Even if that were to occur, the probability that a replacement full-scope IAEA safeguards agreement would not be possible is exceedingly low. We consider the probability of both conditions arising to be near zero. Nevertheless, if this were to occur, and if the U.S. determined that the absence of full-scope IAEA safeguards in the nonnuclear weapon state members of the Community was not related to a failure of Euratom or its member states to abide by their nonproliferation commitments and if the U.S. otherwise determined that nuclear exports to the Community would not be inimical to U.S. security, we would consider seeking

legislative remedies to permit continued nuclear exports on the basis of such "fall-back" safeguards. If these highly improbable events were to occur in the case of other cooperating partners, the same considerations would apply.

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2. U.S. law requires the application of both "safeguards" and full-scope "IAEA safeguards" for so long as the material is under the "jurisdiction or control" of the party, irrespective of other provisions in the Agreement. Art. 14(3) of the Agreement provides for the continuation not just of the obligations but also of the "rights" of safeguards if the Agreement is suspended or terminated. The obligations of NPT safeguards, however, last only so long as the party does not exercise its right of withdrawal from the treaty. The NPT (Art X(1)), the Agreement (Art.6), and the IAEA/Euratom Agreement (Art.25(b)) clearly provide that safeguards will no longer apply in any country that leaves the NPT. Among those safeguards "rights" that will continue after abrogation of the US/Euratom agreement is the right not to apply safeguards upon leaving the NPT. Art.6 provides that if neither IAEA nor Euratom safeguards can be applied, then the parties shall work out a bilateral arrangement that is "equivalent to" NPT safeguards -- yet equivalency, here as before, must literally encompass both rights and obligations, including the right to revoke safeguards. How, therefore, do the safeguards arrangements under Art. 6 satisfy the perpetuity requirement?

ANSWER: As noted in the response to question 1, paragraphs 1(a) and 2(A) of Article 6 require the application of full-scope IAEA safeguards pursuant to the safeguards agreement between the Community, its non-nuclear weapon Member States and the IAEA. Paragraph 3(A) of Article 6 provides that if safeguards are not being applied pursuant to the aforementioned NPT full-scope safeguards agreement, the Community is obliged to enter into a safeguards agreement or agreements with the IAEA which provide for effectiveness and coverage equivalent to that provided by the NPT safeguards agreement. Article 6 does not provide for safeguards that are equivalent in all respects to NPT safeguards, as suggested in the question, nor contrary to the premise stated in the question, does it proviue that safeguards will no longer apply in any country that leaves the NPT. On the contrary it provides that safeguards will always apply.

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Paragraph 3 of Article 14 provides the obligation for safeguards in Article 6 will continue in effect notwithstanding the termination or suspension of the Agreement. This provision of the Agreement also provides for the perpetuity of the rights contained in Article 6. While it is true that a state which withdraws from the NPT may terminate its NPT safeguards agreement, there is no right specified in Article 6 to withdraw from IAEA safeguards. We consider it highly improbable that Euratom or its nonnuclear weapon member states would withdraw from the NPT and terminate their NPT safeguards agreement. (In this connection, the recent decision to extend indefinitely the NPT is supportive of the U.S. legal and policy objective to promote perpetuity of safeguards.) However, even if this unimaginable event were to occur, Article 6 obliges the Community to enter into a safeguards agreement with the IAEA of equivalent effectiveness and scope. If that is not possible, then the provisions in Article 6 calling for backup safeguards would be triggered.

It is relevant to note that the NNPA requirement for perpetuity of safeguards has been met in comparable fashion in all U.S. peaceful nuclear cooperation agreements since passage of the NNPA. Moreover, Article 6 and Article 14 of the US-Euratom agreement require "full-scope safeguards" safeguards in perpetuity in the nonnuclear weapon member states of the

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Community. Section 123.a(1) of the NNPA requires perpetuity of IAEA safeguards only on U.S.-obligated nuclear materials. Hence the draft US-Euratom agreement exceeds U.S. legal requirements in this respect.

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3. The consents and approvals addressing nuclear fuel cycle activities identified in Article 8 pertain to certain "delineated" peaceful nuclear activities occurring within "the territorial jurisdiction" of Euratom and the United States, the two parties to the Agreement. The DOE analysis submitted with the Agreement, however, provides that new members of Euratom would "automatically ... be covered by the advance consent arrangements" in the Agreement (p.77). This automatic extension of U.S. consents, coupled with the notification procedure for adding facilities to the delineated program without any further congressional review or approval, suggests that the peaceful programs are neither delineated to existing program activities nor limited even to the current territorial jurisdiction of Euratom. The scope of these consents and approvals, in short, appear to be open-ended. How can the United States meaningfully satisfy existing statutory requirements in sec. 131 of the Act with respect to assessing both the proliferation risks and the inimicality of unknown activities in unknown countries?

ANSWER: The scope of the U.S. consents and approvals in the proposed new U.S.-EURATOM Agreement is not open-ended. In the new agreement, U.S. consents and approvals are given only under carefully specified conditions and only in a delineated program that stays within a framework agreed upon by the United States and EURATOM. The safeguards on the facilities in this program must be deemed adequate by the U.S. and the physical protection standards required by the agreement must be applied. Moreover, if the U.S. believes at any time that any activity in the EURATOM delineated program will pose a significant increase in the risk of nuclear proliferation or in the threat to U.S. national security, the U.S. has the unilateral right to suspend its consent.

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EURATOM and the United States will consult on a regular basis concerning the implementation of the agreement. This will provide the basis for the U.S assuring itself concerning the adequacy of safeguards and physical protection at the facilities listed in the EURATOM delineated program. The present judgment that these criteria will continue to be met is grounded upon the current U.S. political, economic and security relationship with EURATOM and its member states, and EURATOM's superlative non-proliferation credentials. We do not assume, however, that these or any other circumstances necessarily will remain the case. For this reason the agreement imposes stringent conditions in order for EURATOM to make use of the U.S. approvals. The suspension clause, along with the agreement's numerous provisions for consultation and revision, ensures that the United States will be able to address a serious degradation in the non-proliferation situation or a significantly increased threat to U.S. national security. This broad, unilateral U.S. suspension right ensures that we will be able to make the requisite statutory judgments over the extended period of the agreement.

It is not clear whether or when any new members will be invited to join EURATOM. The question of offering membership is one for the EU alone to decide. However, any country seeking to become a member of EURATOM would have to accept

EURATOM's accession requirements. The Community has provided us with a paper (Attachment A) on accession requirements clearly confirming that among the nuclear-related requirements are that the new member be a party to the NPT (which includes acceptance of full-scope IAEA safeguards by non-nuclear weapon states) and a member of the Nuclear Suppliers Group (NSG). In addition, any new member would have to abide by the EURATOM Treaty and accept EURATOM safeguards on all its nuclear activities.

The member states of the Community have also adopted a common policy on transfers of plutonium, highly enriched uranium, and related equipment and technology between member states. The common policy was adopted on November 20, 1984 and published as IAEA Document INFCIRC/322 in April 1985 (Attachment B). The common policy establishes stringent conditions that must be met for intra-Community transfers, including detailed documentation for tracking purposes, physical protection at least equal to the levels required by the Nuclear Supplier Guidelines (NSG), and retention of certain rights by the originating member state. These include a right, in considering certain transfers, to take into account "the nature and the degree of development of the nuclear programmes in the recipient Member States;" a right to approve subsequent retransfers to any other member state; and a right to veto production by the recipient state of HEU using transferred equipment or technology.

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It should be recognized, as well, that any new EURATOM member states would acquire not just the rights, but also the obligations and controls contained in the U.S.-EURATOM Agreement. Thus, new EURATOM member states will not, as posited by the question, acquire the "automatic extension of U.S. consents," because extension of U.S. consents to additional facilities is not "automatic" even for existing EURATOM members. Rather, they will become eligible, on the same basis as existing member states, to make use of the mechanisms in the Agreement for adding facilities that may be in their territories to the delineated program, provided that the stringent conditions for such additions are satisfied.

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4. During congressional consideration of the China Agreement on 10/25/85, the State Department submitted a Legal Memorandum on the subject-to-laws issue, i.e., the continuing effect of "national laws, regulations and license requirements" following entry into force of the Agreement. State argued that the inclusion of this provision "ensures the availability of the necessary flexibility for the United States in the future" (S.Hrg. 99-339, p.153). A similar clause appears in the US/Japan agreement. Questions: (a) Why was this provision omitted from the new US/Euratom agreement and what is the legal effect of this omission? (b) The Agreement requires the U.S. not to use export licenses "to restrict trade" and to process licenses quickly; it also sets "prevention of nuclear trade" as grounds for termination. How will the accord affect the content or implementation of the "laws, regulations and license requirements" of the United States, especially with respect to export controls and sanctions related to proliferation?

ANSWER: A provision on implementing the agreement in accordance with national laws has generally been included in other U.S. agreements for peaceful nuclear cooperation to emphasize that the agreement is permissive in nature and is not self-executing, i.e., to make clear that actual exports of nuclear material and equipment are not authorized by the agreement itself but require the issuance of an export license or other relevant authorization. Notwithstanding the absence of a provision on implementation in accordance with national laws, the same thing is true of the proposed U.S.-EURATOM Agreement -- it <u>permits</u> exports of nuclear material and equipment, but it does not <u>obligate</u> the United States to approve any particular export.

The absence of the provision from the U.S.-EURATOM Agreement in no way corstrains Congress's constitutional powers to legislate. Moreover, the United States is bound to act in

accordance with its national laws and regulations whether or not a provision on implementation in accordance with national laws is contained in an agreement. EURATOM is well aware of this.

The United States originally proposed that the Agreement contain the standard provision on implementation in accordance with national laws. However, the Europeans found this type of provision difficult to accept because for them such language seemed an "invitation" for a Party to enact legislation that establishes conditions to cooperation beyond those found in the agreement itself. In exchange for EURATOM's withdrawal of certain related proposals, we agreed to accommodate the EURATOM concerns since, as noted, the inclusion of such a provision, though preferable for the sake of clarity, is legally unnecessary for the United States.

There is no conflict between the obligations in Article 4, on the one hand, and U.S. interests in non-proliferation on the other. In fact, as Dr. Schlesinger noted in his testimony, continued trade between the U.S. and EURATOM in the nuclear area will enhance our ability to form a united front with our European allies on proliferation issues and increase U.S. influence in this important area. Article 4 states inter alia that the Parties shall facilitate nuclear trade between themselves, that authorizations including export and import licenses shall not be used to restrict trade, and that

applications for authorizations shall be acted on as soon as possible. The United States has every confidence that it will honor these obligations. All nuclear trade under the Agreement must take place on the terms set out in the Agreement. In addition, U.S. implementation of the agreement, including issuance of export and import licenses, will initially be carried out in conformity with existing U.S. laws and regulations, which are well-known to EURATOM. We think it highly unlikely that the United States would ever take actions that would put itself in breach of Article 4 or any other provision of the Agreement. Nevertheless, the provisions of Article 4 are not a bar to possible changes in the content or implementation of the laws, regulations and license requirements of the United States, including changes that could, in theory, and at some point that we think is highly unlikely to occur, lead EURATOM to assert a breach.

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5. Sec. 11 aa. of the Act defines "special nuclear material" as including all plutonium. Sec. 123 (a)(1) and (2) require safeguards over "all" special nuclear material obligated by an agreement for cooperation. Similarly, Sec. 127(1) requires the application of safeguards with respect to "any" special nuclear material proposed to be exported, previously exported and subject to an applicable agreement for cooperation, and used in or produced through the use of such material. Sec. 53 a. authorizes the NRC to issue licenses to export all special nuclear material under an agreement arranged pursuant to Sec. 123. With respect to Pu-238, Sec. 54 b. of the Act authorizes the NRC to "distribute" Pu-238 to foreign persons outside of such an agreement. There is no provision in the Act, however, that authorizes a safeguards exemption for transfers of Pu-238, including those arranged pursuant to an agreement for cooperation negotiated under Sec. 123. To the contrary, both Sec.'s 123 and 127 (which apply to U.S. nuclear exports to Euratom), respectively require safeguards over "all" and "any" special nuclear material. Furthermore, since the U.S. Department of Energy has recently defined "weapons-usable nuclear materials" as including "plutonium of any isotope composition," it is untenable that the United States would authorize a safeguards exemption for any material that, according to the Department of Energy, "may be utilized in making a nuclear explosive or weapon" (60 F.R. 17344). Questions: (a) On what U.S. legislative authority can Side Letter No. 45 of this Agreement exempt Pu-238 from safeguards? (b) Is the intent of this Side Letter also to extend this exemption to other controls under the Agreement, including the peaceful use guarantee, and if so, how will the U.S. ensure that Pu-238, a material used in satellites, will not be used for "any other military purpose" as such term is used in Sec. 123 (a)(3)?

ANSWER: The side letter by its terms does not exempt Pu-238 from safeguards. Plutonium containing 80% or more of plutonium-238 has been exempted from the definition of "special fissionable material" and thus from safeguards since the establishment of the IAEA safeguards system. Article XX of the IAEA Statute defines "special fissionable material" as plutonium-239, uranium-233; uranium enriched in the isotopes 235 or 233 "and such other fissionable material as the Board of Governors shall from time to time determine." IAEA safeguards

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document INFCIRC/66 specifies that safeguards will be applied only to "nuclear material" as defined in Article XX of the Statute, therefore exempting plutonium containing 80 percent Pu-238. IAEA safeguards document INFCIRC/153 specifically exempts plutonium-238 (para 36).

Similarly, the Nuclear Suppliers Group and the NPT Exporters (Zangger) Committee both exempt plutonium with an isotopic concentration of plutonium 238 exceeding 80% from Trigger List controls under paragraph 1.2 (a) of the Guidelines. Moreover, the international standards for physical protection of nuclear material published by the Agency as INFCIRC/225/Rev.3, exempt plutonium with a concentration exceeding 80% in plutonium-238.

In accordance with the above-cited international standards, Section 54b. of the Atomic Energy Act, as amended, provides that "Notwithstanding the provisions of sections 123, [emphasis added] 124, and 125, the Commission is authorized to distribute to any person outside the United States (1) plutonium-238, and (2) other special nuclear material when it has, in accordance with subsection 57 d., exempted certain classes or quantities of such other special nuclear material or kinds of uses or users thereof from the requirements for a license set forth in this chapter....The Commission shall not distribute any plutonium containing 80 per centum or more by weight of plutonium-238 to any person under this subsection if, in its

opinion, such distribution would be inimical to the common defense and security." Moreover, Section 127(1) of the Act requires, as a condition for the export of special nuclear material, "IAEA safeguards as required by Article III(2) of the Treaty, [emphasis added] which in turn calls for safeguards in accordance with an IAEA safeguards agreement as described above. Hence exemption of plutonium containing 80 percent Pu-238 is also consistent with Section 127(1) of the Act.

In accordance with U.S. law, the NRC 10 CFR Part 110 regulations for Export and Import of Nuclear Equipment and Materials cite under §110.42 the exemption of plutonium containing 80 percent or more by weight of plutonium-238 from the requirement of an agreement for cooperation for export.

On the basis of U.S. law and the internationally-accepted IAEA Statute and procedures, exports from the United States of plutonium exceeding 80% in plutonium-238 have been approved for more than twenty years on the basis of findings that the proposed export will not be inimical to the common defense and security of the United States. These exports have taken place notwithstanding the presence or absence of a section 123 agreement with the recipient. We expect any future exports of Pu-238 to EURATOM will take place on the same basis (i.e., outside the Agreement for Cooperation).

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With regard to exports of pu-238 for non-nuclear military uses, such as to power satellites, any export of Pu-238 of 80% or more above general license limits (Pu-238 in cardiac pacemakers or in quantities less than 5.88 milligrams contained in a source or device) would require a specific NRC license and, if over 10 grams, Executive Branch review. No such export would be approved unless found to be in accordance with the Atomic Energy Act, as amended, and not inimical to the common defense and security of the United States.

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6. Under U.S. law, the NRC defines the "adequacy" of physical security controls in agreements for cooperation. Though current U.S. physical security controls reflect the widely-accepted international standard designated as applying in the Agreement, which standard -- the NRC standard or the INFCIRC 254 standard -- will apply in the event the NRC tightens its controls at any time over the 30 year of this Agreement?

ANSWER: As noted, the U.S has determined that international standards for physical protection are equivalent to NRC standards. The U.S. played a major role in developing INFCIRC 254, INFIRC 225 and INFIRC 274 and the physical protection levels and measures they contain. The NRC and relevant agencies keep under constant review the adequacy of domestic as well as international physical protection standards. We do not anticipate any conflict between domestic and international standards in the future. We expect that any proposed changes to one or the other would be closely coordinated between the U.S. and our cooperating partners in Euratom and elsewhere as they have been in the past. Article 11 of the proposed US-Euratom agreement specifically foresees the possibility of revising international guidelines on physical protection. In the highly unlikely event that the U.S. were to amend its domestic standards without corresponding changes in international standards, the U.S. would have to determine on a case-by-case basis whether our cooperating partners have physical protection in effect which is equivalent in effectiveness to the amended U.S. standards. If we

determined that that a cooperating partner did not have physical protection systems which provide for the equivalent of the new U.S. domestic standards, we would work with them on steps needed to be taken to make them comparable in effectiveness and thereby ensure continued U.S. nuclear exports. It should be noted in this connection that all member states of the Community presently meet or exceed current international standards.

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7. What is the legal basis for the claim in the Christopher/O'Leary Memorandum for the President of 9/22/95 that sensitive nuclear technology may be "transferred outside the coverage of an agreement for cooperation..."?

ANSWER: Section 57(b) of the Atomic Energy Act of 1954, as amended, prohibits any "person to indirectly engage in the production of any special nuclear material outside of the United States except (1) as specifically authorized under an agreement for cooperation made pursuant to Section 123, including a specific authorization in a subsequent arrangement under Section 131 of this Act, or [emphasis added] (2) upon authorization by the Secretary of Energy after a determination that such activity will not be inimical to the interest of the United States ...[with the concurrence of the Department of State and following consultation with ACDA, the NRC, the Department of Commerce and DOD]."

The export of SNT is regarded as "indirectly" engaging in the production of special nuclear material, and therefore to be covered by Section 57(b). This statutory scheme provides for two alternative methods for regulating SNT exports, one "inside" a Section 123 agreement, and one "outside" such an agreement. Of course, other statutory requirements, in particular Sections 127 and 128 of the Act, would have to be satisfied in any case if an application for an SNT export were to be filed with the Secretary of Energy.

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It has been a long-standing policy of the United States to exercise restraint in the transfer of SNT; and no such transfer has occurred since this technology category was defined in 1978, whether under an agreement for cooperation or pursuant to the alternative procedure spelled out in Section 57(b)(2). No change in this policy is foreseen.

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8. The U.S. has promised Japan equal treatment with Euratom, yet there is no parallel in the US/Euratom Agreement to the detailed nuclear reporting procedures contained in Note Verbale No. 329/SCNE, submitted to the United States by the Government of Japan on November 4, 1987 -- (a) Why were these procedures not incorporated into the Agreement with Euratom? and (b) Does the absence of these procedures from the Agreement jeopardize Japan's continued compliance with the terms of the Note Verbale, given the U.S. commitment of equal treatment?

ANSWER: It has been normal practice to specify reporting and other procedures relating to the implementation of a peaceful nuclear cooperation agreement in separate administrative arrangements. Such administrative arrangements can be completed at the same time as the nuclear cooperation agreement itself, but more often they are drafted after the agreement has gone into effect. In the case of the US-Japan agreement, the Government of Japan wished to incorporate most of the implementation procedures in a note vebale in connection with the agreement itself. In the case of the draft US-Euratom agreement, we are following the more standard practice of a separate, follow-on Administrative Arrangement. Paragraph 1 of Article 16 provides that the "appropriate authorities of the Parties shall establish an Administrative Arrangement in order to provide for the effective implementation of the provisions of this Agreement." We are in the process of discussing such an administrative arrangement with Euratom authorities.

In neither the case of the Japan agreement nor the Euratom agreement are the reporting procedures an integral part of the

agreement itself, but rather are a means of implementing its various provisions. Absence of reporting procedures in the present documentation relating to the US-Euratom agreement in our view does not "jeopardize Japan's continued compliance with the terms of the Note Verbale No. 239/SCNE." We expect that both the U.S. and Japan will abide by all commitments contained in or related to the US-Japan agreement for cooperation.

In this regard, we consider the new US-Euratom agreement and the US/Japan agreement to be in all essential respects equivalent.

Each agreement contains all the conditions and controls required by the Nuclear Non-Proliferation Act of 1978 (NNPA) for U.S. agreements for peaceful nuclear cooperation, each contains advance, long-term consent arrangements, and each applies on a reciprocal basis. The differences are in the details. For example, the safeguards requirements are, of necessity, stated differently in the two agreements, owing to the multinational nature of EURATOM and the applicability of three sets of safeguards regimes -- full-scope IAEA safeguards, voluntary safeguards offers (in the case of France and the UK as well as the U.S.), and EURATOM safeguards. There are also differences in the respective nuclear programs of EURATOM and Japan that needed to be taken into account -- e.g., the

plutonium transportation arrangements that play so prominent a role in the U.S.-Japan Agreement were unnecessary in the U.S.-EURATOM Agreement. Again, developments in IAEA safeguards in recent years permitted a change in the manner of presenting the safeguards criteria for addition of new facilities to the list of facilities eligible for the advance, long-term consent arrangement. Instead of relying on "safeguards concepts," as in the U.S.-Japan Agreement, the U.S.-EURATOM Agreement was able to rely on the IAEA's ability to meet its "objectives and inspection goal" for a particular facility -- a dynamic approach that has the equivalent effect of permitting the U.S. to make the necessary statutory determinations now for future facilities in EURATOM.

The side letter to the 1987 U.S.-Japan Agreement to which the question refers reads, in more complete form than as cited, as follows: "[S]hould the United States of America subsequently conclude a new or amended agreement for peaceful nuclear cooperation with another nation or group of nations which does not contain one or more of the requirements presently set forth in Section 123 a. of the Atomic Energy Act of 1954, as amended, for agreements for cooperation, or should the United States of America agree to implement those requirements in a manner which provides significantly greater practical advantages to a nation to which all such requirements

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apply than these agreements [i.e., the U.S.-Japan agreement and implementing agreement] afford to the Government of Japan, the Government of the United States of America will make its best efforts to provide to the Government of Japan similar treatment, including, as may be necessary, through amendment of these agreements."

The proposed new U.S.-EURATOM agreement demonstrably contains all section 123 requirements, just as the U.S.-Japan agreement does. As for "significantly greater practical advantages" that might result from implementation of another U.S. agreement for cooperation such as the new U.S.-EURATOM agreement, this obviously could be a relevant issue only once the agreement in question is being implemented.

ATTACHMENT A

Euratom/US

Briefing note on the accession of third countries to the European Atomic Energy Community and its consequences for nuclear cooperation agreements.

Greenpeace, the Nuclear Control Institute and others have raised a question as to whether accession of Eastern European countries to the European Union could imply a risk of proliferation of nuclear weapons. This note sets out the principles governing the status of nuclear agreements concluded by new Member States prior to their accession to the Community.

A third country, wishing to become a Member State of the European Union, including the European Atomic Energy Community, is required to accept the exisiting EU policy and legislation measures, including the Treaty establishing the European Atomic Energy Community and the international agreements concluded by that Community. If a third state would have problems with a certain piece of legislation, or indeed an international agreement, it could possibly be granted a transitional period for complying with this legislation but could not be exempted from it altogether.

Thus, safeguards will be implemented in the territory of the third States in question pursuant to Chapter VII of the Euratom Treaty by the Commission. Furthermore, the third State in question would have to adhere to the verification agreement between the International Atomic Energy Agency, the non-nuclear weapon states of the Community and the Commission (INFCIRC 193), on implementation of safeguards by the IAEA.

The nuclear cooperation agreements concluded between Euratom and third countries would become applicable to any adherent state upon its adhesion. However, Article 105 of the Euratom Treaty sets out the basic principle of validity and applicability of nuclear agreements concluded by new member States prior to their accession to the Community:

> "The provisions of this Treaty shall not be invoked so as to prevent the implementation of agreements or contracts concluded before its entry into force by a Member State, a person or an undertaking with a third State, an international organisation or a national of a third state where such agreements or contracts have been communicated to the Commission not later that 30 days after the entry into force of this Treaty."

This provision only expresses the rule of international law that a later treaty entered into by a party to an earlier treaty cannot affect rights which the other parties to the earlier treaty derive from it.

The Court of Justice of the European Communities has ruled that the expression "entry into force" in this context must be interpreted as including accession of a State to the

Communities[1]. More importantly, the Court has consistently ruled that the purpose of this provision is to safeguard the rights of third States and to protect their legitimate reliance in the implementation of the existing agreements.[2]

It may however be that agreements concluded by candidate Member States contain provisions on subject matters for which Euratom is either exclusively responsible or in relation to which the Community has to fulfill obligations that require action on Community level. In that case, pursuant to Article 106 of the Euratom Treaty, the new Member States "shall be required to undertake jointly with the Commission the necessary negotiations with these third States in order to ensure that the rights and obligations arising out of such agreements shall as far as possible be assumed by the Community".

In this context, Article 19, third paragraph, of the new US/Euratom Agreement already stipulates that "the rights and obligations with respect to nuclear supply arising out of a nuclear cooperation agreement between the United States of America and any third State that accedes to the Community after entry into force of this Agreement shall be replaced by those of this Agreement upon accession of that State to the Community."

Thus, provisions of an agreement for cooperation between the United States and the third country, adhering to the European Union, relating to nuclear supply will be superseded by the new US/Euratom Agreement upon the entry of that third country into the E.U. Provisions relating to other areas of nuclear cooperation will be subject to negotiations between us and the third country concerned.

It is to be noted that all Eastern European countries are party to the NPT, whereas most of them have concluded full-scope safeguards agreements with the IAEA and are member of the Nuclear Suppliers Group.

For the record, it is noted that the Commission is preparing opinions on membership applications for the following ten countries:

Estonia	Czech Republic
Latvia	Hungary
Lithuania	Bulgaria
Poland	Romania
Slovak Republic	Slovenia

[1] Case C-324/93, judgement of 28 March 1995.

[2] Case 10/61, Commission v. Italy;
Case C-158/91, judgement of August 2, 1993.

INF

ATTACHMENT B

International Atomic Energy Agency

INFORMATION CIRCULAR

INFCIRC/322
April 1985
GENERAL Distr.
ENGLISH
Original: FRENCH

COMMUNICATION RECEIVED FROM THE RESIDENT REPRESENTATIVE OF ITALY ON BEHALF OF THE EUROPEAN COMMUNITY

On 27 March 1985 the Director General received from the Resident Representative of Italy, on behalf of the European Community, a letter dated 22 March 1985 transmitting to him the text of a common policy declaration adopted by the ministers for foreign affairs of the ten members of the Community on 20 November 1984, for circulation among the Member States of the Agency. The text of the declaration is accordingly reproduced overleaf for the information of all Member States.

DECLARATION OF COMMON POLICY

The Ten (hereinafter called "the Member States"), united within the framework of European political co-operation:

(a) recalling the rights and obligations deriving from their membership of the European Atomic Energy Community,

(b) emphasizing their support for the objective of non-proliferation of nuclear weapons,

(c) referring to the various undertakings relating to the peaceful utilization of nuclear energy and the safeguarding thereof to which they have respectively subscribed, in particular the Treaty on the Non-Proliferation of Nuclear Weapons and the agreements concluded between the Member States, the European Atomic Energy Community and the International Atomic Energy Agency for the application of safeguards within the Community, and

(d) taking note of the adoption by all the Member States of the Guidelines for the Export of Nuclear Material, Equipment or Technology set forth in document INFCIRC/254 of the International Atomic Energy Agency (hereinafter called "the Guidelines"),

1. State that the principles contained in the Guidelines constitute a common, fundamental set of rules for all the Member States in relation to their nuclear exports,

2. Declare that, provided the provisions of the Treaties of Rome and the competence of the Member States are respected, transfers of nuclear material, equipment and technology may be made without restriction between the Member States, subject to the following additional arrangements:

2.1. Until such time as they are used, separated plutonium and uranium enriched to more than 20% will be stored by the Member States at the place of separation or enrichment to more than 20%, or at the places of fabrication of fuels containing plutonium or uranium enriched to more than 20%, or in a store established and administered by a Member State, or in a place to be determined by common agreement between the Member States concerned.

2.1.1. Plutonium and uranium enriched to more than 20% will be transferred by the Member States upon receipt of a certificate from the consignee (see the model form annexed hereto) specifying the final destination, the quantities, the approximate date of delivery, the timetable for utilization, the form in which delivery is to take place and the allocation of the material to one or other of the following uses:

- fuel supply for any power or research reactor in operation or under construction on the territory of a Member State or under its jurisdiction;
- fabrication on the territory of a Member State or under its jurisdiction for purposes of fuel supply to the reactors specified above or, subject to the terms of paragraph 2.1.3, for purposes of fuel supply to any reactor situated on the territory of a third-party State;
- research and development in any laboratory situated on the territory of a Member State or under its jurisdiction. Subject to the terms of paragraph 2.1.2, the materials may also be transferred to a third-party State under a co-operation agreement relating to research and development;
- utilization in any other installation connected with an energy programme or a research and development programme and situated on the territory of a Member State or subject to its jurisdiction,

including any intermediate storage required for satisfactory implementation of the above-mentioned operations.

2.1.2. The Government of the Member State to which the consignee belongs will confirm the correctness of the information given in the certificate referred to in paragraph 2.1.1 above.

2.1.3. Plutonium and uranium enriched to more than 20% will not be retransferred to a third State without mutual agreement between the Member State that has separated the plutonium or enriched the uranium to more than 20% and the Member State desiring to effect the retransfer, without prejudice to any other rights of prior consent that may exist.

2.1.4. Paragraphs 2.1.1, 2.1.2 and 2.1.3 above do not apply to:

- plutonium having an isotopic concentration of plutonium-238 above 80%;
- special fissile materials used in quantities of the order of a gramme or less as a component of sensitive measuring instruments;
- transfers to a given Member State not exceeding 50 effective grammes in the course of a year;
- retransfers to a given third State not exceeding 50 grammes in the course of a year, without prejudice to any other rights of prior consent that may exist.

2.1.5. The above arrangements will be reconsidered by the Member States in the event that an international plutonium store is set up under the aegis of the International Atomic Energy Agency.

2.2. Installations and technology relating to reprocessing, enrichment and the production of heavy water, or other installations created on the basis of such technology, may be transferred in the light of the nature and the degree of development of the nuclear programmes in the recipient Member States.

2.3. No enrichment facility transferred from a Member State nor any installation created on the basis of the technology derived from such a facility may be designed or operated for the production of uranium enriched to more than 20% without the agreement of the Member State supplying the facility.

2.4. In making transfers of sensitive equipment or technology, the Member States will observe the provisions relating to the protection of secret information.

2.5. The prior agreement of the supplying State will be required for any retransfer of installations, principal components of crucial importance, reprocessing or enrichment technology or the technology of heavy water production, as well as for any transfer of installations or principal components of crucial importance derived therefrom.

Such retransfers and transfers between Member States may take place in consultation with the originating Member State in the light of the nature and the degree of development of the nuclear programme of the receiving Member State;

3. State that the Member States will apply to the nuclear materials under their jurisdiction measures of physical protection at least equal to the levels established in the Guidelines; and

4. State finally that, in the above-mentioned conditions, transfers between the Member States of nuclear materials, equipment and technology will be carried out in a manner compatible with the requirements of non-proliferation and free movement of goods.

MODEL FORM

Request for Transfer of Plutonium or Uranium Enriched to More Than 20%

1. Enrichment or reprocessing facility

1.1. Name or trade name of firm

1.2. Address

2. Consignee

2.1. Name or trade name of firm

2.2. Address

2.3. Principal activity

3. Description of shipment

3.1. Total weight of material

3.2. Weight of fissile plutonium (or uranium enriched to more than 20%)

3.3. Form of material

3.4. Approximate date of delivery

4. Use of the material

4.1. Fuel fabrication

4.1.1. Nature of fabrication

4.1.2. Name, trade name and address of fabrication plant

4.1.3. Timetable for fuel fabrication

4.2. Other uses

4.2.1. Nature of the use

4.2.2. Name, trade name and address of the user

4.2.3. Timetable for use

4.3. Final destination

4.3.1. Nature of final use

4.3.2. Designation of facility

4.3.3. Name, trade name and address of final user

4.3.4. Timetable for final use

I the undersigned certify that the information given in this form is authentic and truthful.

Date and place of signature

Signature

Name and office of signer

Negotiating a U.S.-EURATOM Successor Agreement

Finding Common Ground in Nuclear Cooperation

A Consensus Report of the CSIS
U.S.- EURATOM Senior Policy Panel

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About the Project

On October 13, 1994, the Center for Strategic and International Studies held a meeting attended by current members of Congress and former policymakers. The CSIS U.S.-EURATOM Senior Policy Panel met with the goal of developing thoughtful and timely policy recommendations regarding the current impasse in negotiations between the United States and the European Union. The conclusions and recommendations of this report reflect the consensus of the panel members. Membership in the panel, however, does not indicate agreement with every point of the study, just its overall conclusions.

The findings and recommendations of the panel were drafted at the meeting and subsequently reviewed by the Senior Policy Panel members. The background paper was written by the Political-Military Studies staff at CSIS. As in other instances on policy issues, CSIS served as an effective forum for administration officials, members of Congress, and former policymakers to meet and express their views on international security.

James R. Schlesinger agreed to serve as the chairman of this project, and his outstanding efforts have produced equally outstanding results. Dan Gouré, deputy director of Political-Military Studies at CSIS, served as the project director. Alexander T. Lennon and David C. Earnest, research assistants in Political-Military Studies, drafted the background paper and coordinated the project. Chris Dall and Todd Bluhm, interns in Political-Military Studies, provided research support and assistance throughout the project.

—David M. Abshire, President, CSIS

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I

The CSIS U.S.–EURATOM Senior Policy Panel

Findings and Recommendations

"...failure to continue peaceful nuclear cooperation with EURATOM would be seriously prejudicial to the achievement of U.S. nonproliferation objectives and would jeopardize the common defense and security of the United States."

—President Bill Clinton
March 9, 1994

On December 31, 1995, the agreement for cooperation on peaceful nuclear uses between the United States and EURATOM (the European Union's Atomic Energy Community) will expire. U.S. law, under the Nuclear Non-Proliferation Act (NNPA) of 1978, requires the United States to obtain greater restrictions over peaceful nuclear activities involving U.S.-origin nuclear materials than the existing agreement. The European Union, based upon successful implementation of the existing agreement over the past 35 years, objects to a more restrictive agreement. Efforts to negotiate a successor agreement have stalled and risk a lapse with severe consequences for our mutual security and international stability unless they are rapidly brought to a successful, mutually beneficial conclusion. The findings and recommendations below have been endorsed by the CSIS U.S.-EURATOM Senior Policy Panel.

Findings

- **Renewal of the U.S.-EURATOM agreement is critical for the Atlantic Alliance and for relations between the United States and the European Union (EU).** The U.S.-EURATOM agreement has been and remains a pillar of cooperation between the United States and Western Europe, demonstrating trust and respect in one of many areas of mutual interest. Renewal of this agreement is a crucial reaffirmation of positive, cooperative relations among Western countries.
- **The costs of not concluding an agreement would be detrimental to both the United States and the European Union.** Both the United States and the European Union would lose if an agreement is not concluded. Mutual political, nonproliferation, and commercial interests are at stake. Conclusion of a successor agreement will prevent a series of consequences that would be detrimental to international security.
- **Time is of the essence.** An agreement must be reached within the next few months. The statutory processes necessary to review and accept an agreement are

time consuming. After review and interagency coordination in the U.S. administration, the relevant House and Senate Committees are allowed 30 days of continuous session to review the agreement for conformance with the law. After that, the agreement goes to the full House and Senate for 60 days of continuous session. Based on past experience, this entire process can consume nine months or more. Although the Senior Policy Panel does not want to be alarmist, it is clear that time is running out.

- **A 35-year history of good behavior and cooperation between the United States and the European Union exists.** The present U.S.-EURATOM agreement, negotiated in 1960, has been implemented with successful and beneficial peaceful nuclear cooperation. The historical record of this agreement is exemplary. Future cooperation should be based upon recognition of this history.
- **Both the United States and the European Union have common interests and a common agenda to stem the proliferation of weapons of mass destruction. Effective implementation of that agenda requires the active participation and cooperation of both the United States and European Union.** The next few years are critical for the future of international nonproliferation efforts. Such efforts—including indefinite extension of the nuclear Nonproliferation Treaty (NPT), implementation of effective International Atomic Energy Agency (IAEA) safeguards, negotiations for a CoCom successor-regime for export controls, and negotiations for a comprehensive test ban, to name merely a few—are complex and ongoing. The consequences of compromising, or even jeopardizing, unity over the U.S.-EURATOM agreement would seriously affect the objectives we all seek.

  A substantive agreement should also be reached well before the Non-Proliferation Treaty Review and Extension Conference in April-May 1995. Unity among the United States and member-states of the European Union is crucial to achieve indefinite extension of the NPT. Opponents of an indefinite extension may be able to use any appearance of disunity to disrupt the nonproliferation agenda at the conference.
- **The effects of agreement renewal, or the failure to renew, will be felt far beyond the Atlantic Alliance. Renewal of this agreement is vital for U.S. relations with Japan and Russia.** Under the Atomic Energy Act, the United States cannot engage in or approve of the retransfer of U.S.-origin nuclear materials to Europe without an agreement with EURATOM. Impeding these transfers would adversely affect an important component of Japan's energy program, drive them to

seek other partners in nuclear trade, adversely affect our trade deficit with that country, and can only harm U.S. relations with our ally.

Current agreements to purchase highly enriched uranium (HEU) from Russia, an important nonproliferation initiative to control the spread of fissile materials, would be jeopardized. Renewal of the U.S. agreement with EURATOM is necessary to maintain the financial health of the U.S. market for nuclear fuel. Benefits from sales of fuel are needed to finance U.S.-Russian HEU trade.

- **All nations interested in nuclear energy and nonproliferation will take notice of, and long remember, the results of these negotiations. If the United States cannot reach an agreement on nuclear trade with its closest historical allies and can countenance a major disruption in international nuclear trade, other countries with whom the United States has little or no history of trust and cooperation would take notice.** The nuclear policies of those countries would be set accordingly. The U.S.-EURATOM impasse would thus set a precedent seriously detrimental to nonproliferation objectives.
- **The United States is constrained in its negotiating flexibility by domestic law and the political environment.** The prior consent requirements of the Nuclear Non-Proliferation Act must be met. To achieve a negotiated solution within the limits of the political environment and U.S. domestic law, European understanding and assistance is essential.
- **Long-term programmatic approval is the only practicable foundation for a new agreement with the European Union.** Three options have been put forward as potential bases for a successor agreement. The first option, a waiver of U.S. consent rights, requiring approval by the U.S. administration and both Houses of Congress, would compromise U.S. authority over U.S.-origin nuclear materials. This option is politically and legally difficult for the United States. The second option, case–by–case approval of consent rights, would presumably give the United States a unilateral ability to obstruct any relevant peaceful nuclear activities by the EU. This option is unacceptable to the states of the European Union because of the potential capriciousness of U.S. policy over the long term. Under the third option, long-term programmatic approval, the United States would maintain consent rights and then voluntarily approve relevant activities for a fixed, extended period of time.

Long-term programmatic approval is the core of the current proposal offered by the United States. After careful consideration, the other alternatives—a waiver of U.S. consent rights and case-by-case review by the United States—were found to be

infeasible or inadequate. The United States benefits from long-term programmatic approval by maintaining legal consent rights over activities derived from U.S.-origin materials. In return, the European Union benefits by immediately receiving long-term approval from the United States of its relevant activities. Precedent exists not only in U.S. agreements with Norway, Sweden, and, most recently, Japan, but also EURATOM agreements with Canada and Australia. Both the United States and EURATOM will benefit from a solution based upon this model.

- **Europe is concerned that consent rights may be withdrawn in the future based upon changes in U.S. administration philosophy.** The EU has already witnessed such changes in the late 1970s and again in the 1990s. The Senior Policy Panel is distressed that such signs of mistrust among close allies have developed. In general, however, an exemplary record of nonproliferation and generally good cooperation exists. Unfortunately, such signs of mistrust, however understandable, tend to overlook the positive record that the United States has established as a stable nuclear partner over many years and through several administrations. The prompt conclusion of a new U.S. agreement with the EU will serve to restore confidence and stability in this relationship.
- **The United States must provide Europe with clear evidence and stronger reassurance that it will continue to be a stable, predictable partner in nuclear trade and cooperation.** It is unavoidable that consent rights be acknowledged in the agreement. The United States has a history, however, which supports its reliability as a partner in peaceful nuclear commerce with countries with exemplary nonproliferation records. We would cite such events as the positive experience under the 1988 U.S.-Japan Agreement based upon long-term programmatic approval, the reaffirmation of the legality of programmatic consent based upon an overwhelming vote in the Senate and the confirmation of every relevant agency in the Reagan administration, and the recent defeat of the Markey amendment as just a few examples of such reliability.
- **It is U.S. policy to support peaceful nuclear programs under safeguards.** As President Clinton stated in his 1993 address before the UN General Assembly, "We seek to build a world of increasing pressures for nonproliferation but increasingly open trade and technology for those states that live by accepted international rules." This agreement with EURATOM, and the exemplary nonproliferation record of its member-states, is the perfect opportunity to reaffirm that policy.
- **It should be clear to all that the United States has neither the ability nor the right to seek to control Europe's fuel cycle decisions.** Any attempt to coerce

Europe will simply result in confrontation without a successor agreement and all the attendant consequences. Although the United States held some advantages, particularly in enrichment capacity, when the Nuclear Non-Proliferation Act was passed in 1978, they were reduced long ago. Attempts by the United States to impose the prescriptions of U.S. law extraterritorially have not worked. It is an illusion, based upon an exaggerated and outdated perception of U.S. capabilities, to believe that the United States has decisive leverage over Europe in the nuclear industry any longer. More important, the U.S.-EURATOM agreement should not be allowed to lapse because of disagreements over the future of the fuel cycle. If the United States seeks to use the U.S.-EURATOM agreement as a vehicle to gain control over Europe's fuel cycle decisions, it will get neither a renewed agreement nor control over those decisions.

- **The overall importance of this agreement and the implications of a failure to renew it are not currently recognized by many in the Congress and most of the public.** An awareness of its importance will not only help reach a negotiated, mutually beneficial solution, but also ensure reliable and rational implementation of an agreement.

Recommendations

- **Attention to the negotiations of a successor U.S.-EURATOM agreement should *immediately* be raised to the highest political level on both sides of the Atlantic.** This agreement deserves, demands, and requires the highest political support and attention. Renewal of the agreement will maintain stable and cooperative transatlantic relations as well as strong, coordinated nonproliferation efforts. Failure to renew the agreement, or even delays in renewal, jeopardizes mutual strategic interests, cooperation in nonproliferation, Russian denuclearization, and the future of U.S. involvement in peaceful nuclear commerce.
- **An agreement should be based upon long-term programmatic approval.** The EU Council of Ministers, in accord with the European Commission, should promptly instruct its negotiators to negotiate on the basis of long-term programmatic approval, as proposed in the June 17, 1994, letter from U.S. Secretary of State Warren Christopher to EU Energy Commissioner Marcelino Oreja.
- **The United States must make all efforts to provide clear evidence and meaningful reassurances to EURATOM that consent rights will not be revoked except in the most extreme circumstances.** Long-term programmatic approval in and of itself is not enough. Reassurance could be provided by framing long-term

consent in terms of positive conditions for continuation, not negative conditions for suspension.

- **Although the maximum time available for congressional review of a successor agreement is fixed by law, the White House should make sure that all interagency review and statutory findings be expedited as quickly as possible.** Interagency preparation, to the maximum extent possible, should begin well before an agreement is concluded. Every effort should be made by all relevant government agencies in the United States and the member-states of the European Union to facilitate the necessary procedures and to conclude the approval of the successor agreement promptly.
- **Legitimate differences between the United States and EU nations regarding the nuclear fuel cycle exist. Attempts to resolve those differences must be decoupled from the U.S.-EURATOM negotiations if there is any hope for a successor agreement. Negotiations of a successor agreement should be based upon a principle of noninterference and mutual respect among allies and partners concerning their fuel cycle policies.**
- **Separate discussion among concerned parties over fuel-cycle decisions should proceed with no preconceived outcome as a balanced dialogue among equals.** It is inappropriate for one close partner to attempt to attach conditions and legal constraints upon another. A difference of opinion exists and should be accepted. If the United States wishes to curtail international plutonium activities, it should only attempt to do so by persuasion not coercion.

In conclusion, the U.S.-EURATOM negotiations require intensive political attention at the highest governmental levels, on both sides of the Atlantic. They have not yet received such attention. The mutual interests of transatlantic relations and nonproliferation require nothing less. Each side must rapidly come to an accommodation that addresses the concerns of its partner. Long-term programmatic approval, coupled with meaningful assurances of approval continuity, constitute the most realistic path to that goal. In this manner, the common defense and security of the transatlantic partners will be maintained.

II

Negotiating a U.S.-EURATOM Successor Agreement

Finding Common Ground in Nuclear Cooperation

by the CSIS Political-Military Studies Program

Introduction

The current U.S.-EURATOM* agreement for cooperation (AFC) that governs nuclear trade between the United States and the European Union expires on December 31, 1995. Without an AFC, the United States would not be able to export either special nuclear materials or a complete facility to the EU. As negotiations over renewal of the agreement have stalled without any apparent resolution, it seems more likely that the current agreement will lapse. Some argue that such an outcome would "clear the air" and force both sides to deal directly with the underlying point of contention: the future of plutonium as a fuel source. Others consider the EURATOM agreement an important component of nonproliferation initiatives and argue that its expiration threatens to harm U.S.-European relations, negatively affect U.S. relations with Japan, and reduce the ability of both Europe and the United States to lead global nonproliferation initiatives.

The purpose of this report is threefold: first, to draw attention to the issue of AFC renegotiation and to underscore its urgency; second, to assess the role and significance of the long-standing U.S.-EURATOM partnership; and, third, to make recommendations regarding a resolution of outstanding issues in a way that furthers the interest of both the United States and the European Union as well as nonproliferation in general. Although there are clear economic interests at stake in AFC renegotiation, this paper focuses primarily on the security and political implications of the various options for U.S.-EURATOM renewal and on the potential consequences of a failure to reach a successor agreement.

The report evaluates the consequences of a failure to renew the agreement (or potentially even a lapse in the agreement), outlines the history of the U.S.-EURATOM agreement and relevant affiliated legislative efforts, discusses the potential options for solution, and sets forth a preliminary set of recommendations for a course of action to resolve this crisis.

A lapse of the AFC would have unacceptable consequences for U.S.–European relations, adverse effects on the Western Alliance and U.S. relations with other friends, and, potentially, undermine current U.S. nonproliferation efforts. Therefore, achieving

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* EURATOM is the acronym for the European Atomic Energy Community. The EU currently consists of Belgium, Britain, Denmark, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, and Spain.

a new AFC is important to U.S. national security. Because of the short time remaining before the current agreement expires the problem is urgent.

Consequences of a Collapse of the Agreement

First, U.S. relations with its most important friends and allies will be harmed and the strength of the Atlantic Alliance, still one of the bedrocks of U.S. national security policy, will be weakened. A pattern of mistrust would be created between the United States and Europe that could not but have consequences for relations across a broad range of interests. A collapse of the agreement would have serious repercussions for Japanese-European nuclear materials trade, a situation that the Japanese government would inevitably take into consideration in its overall relationship with the United States. The Atlantic Alliance is currently addressing a number of complex and difficult issues including the implementation of agreements on Partnership for Peace, Combined Joint Task Forces, the Bosnian crisis, and transatlantic defense industrial cooperation. The failure to reach an accord in an area in which both sides have had a long history of positive cooperation cannot but have a chilling effect in these other areas.

Second, the U.S. and European nonproliferation policy and objectives for the upcoming Nonproliferation Treaty Extension Conference in April 1995 could be compromised by a break in U.S.-European cooperation on nuclear issues.[1] The U.S. Government and the European Union have stated they will push for an indefinite extension of the NPT. Without a viable regime for U.S.-European cooperation on nuclear trade, however, the prospects for indefinite, or even long-term, extension of the NPT[2] may be placed at risk. Some nonnuclear signatories to the NPT may view the 1978 NNPA and the subsequent disagreement with EURATOM as a warning sign that in the future the United States might attempt to unilaterally revise the original terms of the NPT. The United States' insistence on restrictions above and beyond the original NPT may make the treaty appear flawed in the eyes of some states. If it is flawed, some nations may argue, why should it be extended indefinitely? Moreover, one of the attractions for nonsignatories to membership in the NPT regime is the promise of assistance for their nuclear energy programs. If this core feature of the NPT regime is put into question, will nonsignatories have sufficient incentives to join?

Some opponents of an indefinite extension of the NPT point to U.S.-European discord on nuclear trade as evidence of the failure of the world's nuclear powers to meet their Article IV obligations to share peaceful nuclear technologies.[3] In fact, at the Third NPT Preparatory Committee, Iran argued that it might not serve its interests to remain a member-state of the NPT if the United States does not give access to nuclear materials to compliant states.[4] A new agreement with EURATOM, one that respects and acknowledges Europe's outstanding record on proliferation issues, could remove a potential impediment to extension of the NPT.

Third, the United States may be compelled to curtail European-Japanese trade in nuclear materials should the EURATOM agreement lapse without a successor agreement. Under U.S. law and the current AFC with Japan, spent fuel derived from U.S.-origin material cannot be shipped to a third country (for example, from Japan to Europe after the expiration of the current AFC) without a separate AFC with the third party. Thus, if the agreement lapses, the United States would be compelled to veto Japanese shipments of spent fuel from U.S.-origin materials to Europe.[5]

The consequences of such a curtailment of trade are quite serious. A curtailment of European-Japanese trade would further strain U.S. relations with a major ally and important trading partner. In the short run, the United States could also experience a widening of its trade deficit with Japan. In the long run, Japan could be forced to look elsewhere for trading partners in this sector, effectively excluding the United States from the Japanese market in nuclear materials.

Fourth, the United States may lose control over the current consent rights it has on U.S.-origin materials in Europe. U.S. leverage over U.S.-origin nuclear materials in Europe after the expiration of the AFC is very much in doubt. The U.S. government maintains that its consent rights under the current AFC extend to all U.S.-origin nuclear materials transferred to Europe prior to the expiration of the AFC. These consent rights, U.S. negotiators argue, will exist even after the AFC expires. European negotiators disagree and claim that after December 31, 1995, EURATOM can retransfer without U.S. consent *any* nuclear materials derived from U.S.-origin nuclear fuel. By this interpretation, the United States may lose substantial leverage as soon as the 1960 AFC expires.

Fifth, existing contracts to buy back Russian highly enriched uranium as low-enriched uranium would be jeopardized. According to testimony given by William H. Timbers, Jr., president and chief executive officer of the U.S. Enrichment Corporation (USEC), the corporation would lose approximately $2 billion of existing sales and future opportunities over the next 10 years if no AFC with EURATOM is reached.[6] This, in turn, would hurt the competitive position of the USEC. In future years, this would jeopardize the ability of the USEC to acquire and market low-enriched uranium made from highly enriched uranium extracted from nuclear weapons dismantled in the Russian Federation. This contract, converting weapons-grade fissile material to commercial nuclear fuel, is considered an important nonproliferation initiative.

It is true that some nuclear development in the United States and in Europe could be impeded, although not destroyed. More important, the overall results of a failure to achieve a new agreement will marginalize the United States in the global transfer of peaceful nuclear materials. As a consequence, the United States would have less influence on the character and evolution of other nations' nuclear energy programs and, somewhat more indirectly, on the nonproliferation

debate, particularly the stringency of international safeguards. Unlike Europe and Japan, the United States has no new orders for nuclear plants and has abandoned the plutonium fuel cycle as a prospective energy alternative. Although the United States is a leader in nuclear technologies today, there are numerous global suppliers of nuclear materials and technology. Nations with a commercial interest in nuclear energy no longer have to deal with the United States.

For some 45 years, the United States has been a leader in shaping the way the world pursues the peaceful uses of nuclear energy. The United States supported the creation and development of EURATOM precisely because it could be the core of a positive program for using and safeguarding nuclear materials. More important, potential trading partners could actively eschew nuclear trade with the United States in the future.

Historical Background

Negotiated in 1958, the current U.S.-EURATOM agreement gives the United States the authority to veto any exports, such as retransfers of U.S.-origin nuclear fuel and equipment from Europe to a third party. The U.S. NNPA of 1978, inter alia, requires the United States to obtain "consent rights" not only for retransfers of U.S.-origin nuclear materials but also the enrichment and reprocessing of any nuclear materials derived from U.S.-origin nuclear fuels or any nuclear fuel irradiated in a reactor supplied by the United States and the storage of any nuclear weapons usable materials.[7] Therefore, under the NNPA, the United States is required by law to negotiate an AFC with greater restrictions than provided for in the existing agreement.

The European Union, and particularly France, object to the idea of a more restrictive AFC and what they see as the unilateral expansion of extraterritorial application of U.S. law. They argue that they should not be held to U.S. domestic law and that additional constraints should not be placed on an agreement that has worked successfully for 35 years. Fundamentally, Europe believes that the United States might not trust the decisions EURATOM makes with regard to its lawful and legitimate peaceful nuclear energy program, treating Europe as an irresponsible partner, and/or that the United States is attempting to gain control of the fuel cycle decisions in Europe, particularly the future of plutonium as a source of nuclear fuel.[8]

The dispute over "consent rights" is at the heart of the current impasse between the European Union and the United States. These consent rights would, for example, give the United States the ability to approve where and under what conditions nuclear materials subject to the agreement can be reprocessed. The United States wants to maintain this ability to fulfill U.S. law under the NNPA. In contrast, the European Union believes that such consent rights would give the United States undue control over Europe's energy security and independence. There is the additional concern that the United States might in the future seek to pressure Europe to alter its nuclear energy

policies by employing the leverage available to Washington through a threat of revocation of consent. These concerns are aggravated by those in the United States who advocate a confrontational approach to Europe with respect to eliciting changes in that continent's nuclear energy program, specifically a renunciation of reprocessing of spent fuel.

Primarily, three different structures for a new AFC are advocated: a waiver of U.S. rights, a case-by-case granting of rights, and long-term assent to a broad program of peaceful use of nuclear materials and technology. The European side has asked for a waiver of the requirements of the NNPA. A minority in the U.S. Congress and among nonproliferation specialists have requested a "doctrinaire" interpretation of the NNPA, requiring a case-by-case review over all activities relating to U.S.-origin nuclear materials, technology, and equipment.[9] The Clinton administration, meanwhile, has offered long-term programmatic approval (LTPA), based upon a precedent set in agreements with the Scandinavian countries and most recently Japan, that would maintain consent rights and the technical possibility of revocation while simultaneously approving all relevant activities for a fixed period of time—for example, 30 years.

To further complicate the negotiations, the procedural requirements for interagency coordination and congressional review of a new AFC are very time consuming. A new agreement would have to be negotiated or, at the very least, an agreement in principle would have to be reached by the end of 1994 to allow time for congressional review to be completed before the current agreement expires. The eleventh hour has arrived.

The U.S.-EURATOM Agreement

This section will trace the origins of some of the arguments surrounding the 1978 Nuclear Non-Proliferation Act as well as long-term programmatic approval negotiations for the successor to the 1960 U.S.-EURATOM agreement. A chronology of events and recent developments in the U.S.-EURATOM negotiations themselves is appended.[10]

The U.S.-EURATOM agreement consists of both a Joint Program Agreement, which entered into force in February of 1959, and an Additional Agreement for Cooperation between the U.S. and EURATOM Concerning Peaceful Uses of Atomic Energy. The latter, which entered into force in 1960 and incorporates portions of the former, has been amended on several occasions and expires on December 31, 1995.

Cooperation between the United States and EURATOM proceeded smoothly until the passage of the Nuclear Non-Proliferation Act in 1978 under the Carter administration. The act introduced new U.S. consent requirements that were to be incorporated into all U.S. agreements for cooperation with third countries and immediately effective export license criteria. In the event that a previous agreement for cooperation existed, it was to be renegotiated to include the new requirements.

As noted earlier, the NNPA imposed new conditions on cooperation that went beyond those required by the 1960 AFC. EURATOM rejected these revised terms, arguing that additional consent rights would compromise the reliability of European access to and use of U.S. materials, thereby giving the U.S. unacceptable and unprecedented influence over Europe's nuclear fuel cycle. Moreover, the Europeans resented being forced to renegotiate an existing international agreement simply because one of the parties had amended its domestic legislation.

Although EURATOM's reaction resulted in an initial embargo by the United States of U.S.-supplied nuclear fuel and equipment in 1978, cooperation was soon resumed on the condition that EURATOM enter into discussions on a revised agreement. Cooperation on this basis, however, as permitted under Section 126a(2) of the Atomic Energy Act amended by the NNPA, was only possible for a two-year period, after which, if a revised agreement had still not been signed, the president had to request an annual waiver of NNPA conditions. Consequently, in each year since 1980 continuation of the U.S.-EURATOM agreement has depended on renewal of the presidential waiver, most recently signed by President Clinton in March 1994. Although use of the waiver has allowed cooperation to continue on the basis of the existing agreement pending its renegotiation, this will no longer be possible once the current agreement expires in December 1995.

Section 123 of the Atomic Energy Act (amended) identifies nine requirements for an AFC with a third country. Included among these requirements are U.S. consent rights for the retransfer, reprocessing, and storage of U.S.-origin fuels. Reprocessing, for example, is covered under Section 123a(7), which requires

> a guaranty by the cooperating party that no material transferred pursuant to the agreement for cooperation and no material used in or produced through the use of any material, production facility, or utilization facility transferred pursuant to the agreement for cooperation will be reprocessed, enriched or (in the case of plutonium, uranium 233, or uranium enriched to greater than twenty percent in the isotope 235, or other nuclear materials which have been irradiated) otherwise altered in form or content without the prior approval of the United States.

Many feel that compliance with these guarantees in the context of requests to retransfer or reprocess spent fuel, so-called subsequent arrangements, is only achievable on a case-by-case basis.[11] Set against this, supporters of long-term consent rights maintain that the law does not bar a one-time subsequent arrangement in the form of programmatic consent for an advanced nation with no proliferation risk. Indeed the NNPA does not specifically preclude such arrangements. Also cited in defense of long-term programmatic consent are commitments, entered into by the United States under the Atomic Energy Act, the NPT, and the NNPA, to provide eligible countries with access to civil nuclear technology and fuel. The NNPA, in Section 101, for example states that:

> The United States, as a matter of policy, shall take such actions and institute such measures as may be necessary and feasible to assure other nations and groups of nations that may seek to utilize the benefits of atomic energy for peaceful purposes that it will provide a reliable supply of nuclear fuel to those nations and groups of nations which adhere to policies designed to prevent proliferation. (Emphasis added.)

The 1978 Nuclear Nonproliferation Act

The Nuclear Non-Proliferation Act of 1978 passed the House on September 22, 1977, by a vote of 411-0, and the Senate four months later, on February 7, 1978, by a vote of 88-3. The final bill was signed into law by President Carter on March 10, 1978. Discussion about U.S. export controls began in mid-1975 during the 94th Congress in response to the president's nonproliferation proposals and to growing U.S. concern about the possibilities of nuclear proliferation. The Indian test explosion in 1974 was perhaps the primary catalyst for action. Indeed, during the debate in the Senate over the passage of an amendment to the bill, Senator Charles Percy of Illinois remarked, "We are all alarmed that we have a developing country [India] that used technology and know-how from Canada and the United States under the Atoms for Peace Program to develop a nuclear bomb."[12]

Soon afterward, members of Congress took a second look at the relationship between U.S. export policy and nonproliferation efforts. Congress identified four weaknesses in U.S. export controls as they stood:

1. *Variable Controls*—The existing agreements for cooperation created a confusing system of controls that varied from country to country.
2. *Absence of Standards*—There were no existing standards to give approval or disapproval to a transaction.
3. *Narrowness of Focus*—Under existing agreements, U.S.-origin materials were monitored, but the entirety of a recipient's nuclear program was not considered. As a result, the United States often exported materials to a country whose facilities were not safeguarded.
4. *Ambiguity of Policy*—U.S. policy was unclear on the fundamental principles of the export controls.

The fact that Article IV of the NPT (which will be discussed in detail in a subsequent section) might be abused by countries to gain access to dual-use reprocessing technology was particularly troublesome. Several members of Congress expressed concern that

> The U.S. is beginning to undermine the purpose of the NPT by export policies that had the effect of permitting non nuclear weapon States to come exceedingly close to a weapons capability without, in the process, actually violating the letter of existing agreements....A sudden political shock might be sufficient to push states overtly over from non-weapons status to weapons capability. With the wherewithal for such weapons already in hand, the pressures for making such a decision in crises might prove insurmountable.[13]

Therefore, stricter controls over U.S. exports were designed to draw a clearer line between civilian nuclear programs and military nuclear programs. Congress hoped the NNPA would complement the NPT by limiting the *capability* to produce nuclear weapons.

The Nuclear Nonproliferation Act was seen by many of its supporters as establishing a baseline for U.S. nuclear export policy. Congress, however, was also fearful of tying the executive's hands, especially with regard to the United States' European allies. The committee report on the act states that Congress was "particularly sensitive to the need for continued cooperation with our European allies, even as they reassess their commitment to the use of plutonium as a reactor fuel."[14] This was one of the primary motivations for including the option of a presidential waiver—a waiver that has been exercised in one form or another since 1978.

The act permits three types of waivers. The first, under Section 123 of the act, is a waiver of the NNPA AFC requirements; this is the type of waiver Europe currently hopes to receive, though the United States has categorically stated it will not grant it. The second type of waiver, authorized in Section 126(a)(2), allows the United States to continue exporting for up to two years if the recipient nation "agrees to enter into negotiations" to accept the new conditions required by the act. The Carter administration certified to Congress that EURATOM had agreed to enter into discussions and issued this waiver in 1978. The third waiver is an annual waiver of certain nuclear export license conditions in Section 126 (a), first granted by President Carter in March 1980. Subsequently, this waiver has been reissued every year for the duration of the 1960 agreement. In this way, EURATOM and the United States have avoided the difficult issues of the NNPA for 16 years.

The State of the Nuclear Industry

U.S. leverage over nuclear trade is not nearly as great as it once was. When the NNPA was passed in 1978, the strong U.S. presence in nuclear energy technologies and materials allowed the United States to believe that it had substantial leverage over Europe's civilian nuclear industry. Today, Europe has considerably reduced its dependence on the United States. There are numerous alternative suppliers of nuclear materials and equipment to which Europe could turn in the event of a U.S. embargo. Since the 1970s, Europe has established an indigenous nuclear industrial capacity and has become an active competitor in the global market for nuclear technology and materials. Although a cutoff of U.S. materials could hurt selected elements of Europe's nuclear industry, it certainly could not place it in jeopardy.[15] Some in Europe believe that the U.S. nuclear industry is more vulnerable than is Europe's to a cutoff of trade.

Long-term Programmatic Consent: The U.S. Debate

Different administrations have offered long-term programmatic consent as an option to fulfill the requirements of the NNPA. In fact the Clinton administration has offered this

as an option in the current dispute. Under this option, activities under the NNPA would be approved en masse for a fixed period of time. In this manner, EURATOM members would be virtually assured of uninterrupted access to and use of U.S.-origin equipment and enriched uranium for their civil nuclear-power programs. This would include the reprocessing of Europe's spent nuclear fuel.

Despite a long history of U.S. government support for long-term programmatic consent, some sources have voiced concern that long-term programmatic consent contravenes key points of the Atomic Energy Act of 1954 as amended by the NNPA of 1978. These differing views first came to a head in 1985 when a coalition of members of Congress and advocacy groups challenged in court the agreements for cooperation containing long-term programmatic consent that had been negotiated by the Reagan administration with the governments of Norway and Sweden.[16] The two agreements, which reflected a policy change brought about by the Reagan administration, were the first of their kind to contain long-term approval for retransfer and reprocessing of U.S.–origin nuclear fuel.

The court in *Cranston v. Reagan* agreed that within its province was the question of whether "a statutory scheme with specific provisions governing 'subsequent arrangements' to agreements for cooperation—including arrangements for retransfers which require prior approval under an agreement—will permit advance consent for retransfers as an element of the agreement itself."[17] The court, however, also noted that the case presented a nonjusticiable political question upon which it could not rule, effectively deferring to the administration.

Soon after this decision, long-term programmatic consent was again challenged, this time in the course of congressional debate on the 1988 U.S.-Japan Agreement for Cooperation. In December 1987, majorities of the Senate Foreign Relations and House Foreign Affairs committees sent letters to the president advising him that they had found the agreement to be inconsistent with the U.S. Atomic Energy Act. This was followed by a General Accounting Office (GAO) report that also raised doubts about the legality of the U.S.-Japan Agreement For Cooperation.[18] The focus of debate on the U.S.-Japan Agreement was not whether the agreement contained the consent rights and guarantees called for in Section 123 of the Atomic Energy Act (the agreement actually expanded these rights), but rather the manner in which these rights were to be carried out, namely through a 30-year programmatic consent.

In its defense, the administration countered that nowhere in the act was there a bar on programmatic arrangements for plutonium use with a nonnuclear-weapon state. The executive branch was required, however, to comply with the procedural and substantive standards of Sections 123 and 131. This, the administration argued, had been done. As mandated under Section 123b, the president had determined that the agreement "will promote, and will not constitute an unreasonable risk to, the common

defense and national security." Also, as specified in Section 131a, both secretaries of energy and defense had determined that a subsequent arrangement to the agreement "will not be inimicable to the common defense and security."

In effect, the debate over the agreement hinged on interpretation. Neither case-by-case consent rights nor long-term programmatic consent were specifically required by the act. What was mandated was a policy that met the conditions laid down in Sections 123 and 131. The administration argued that a 30-year programmatic consent period fulfilled these requirements; its opponents disagreed. This difference was crucial because of Senator William Proxmire's amendment to the Atomic Energy Act, which provided that if the president sent to the Congress a nuclear agreement that did not meet all the requirements of law, the agreement could not go into effect unless it was approved by both Houses. If, on the other hand, the agreement complied with all statutory requirements, it would automatically go into force 90 days after its submission to Congress if both Houses had not voted before then to disapprove it. Therefore, because the administration maintained that the agreement complied with the Atomic Energy Act, congressional opponents of the agreement were forced to introduce a resolution for disapproval. The resolution was defeated in the Senate 30-53 after a debate on March 21, 1988, and was never introduced in the House.

This background sketch brings us to the current disagreement. At this point, we will discuss the points of contention and the various options for a resolution of this impasse. We will conclude with a series of recommendations in an attempt to identify a potential, mutually beneficial solution.

Contending Approaches to AFC Renewal

Currently, three options are being discussed:

Waiver

At one end, **the European Union has requested that President Clinton issue and Congress accept a waiver to the consent rights requirements of the NNPA.** The EU argues that the original cooperation agreement has been successful and that they have received an annual waiver of the requirements of the NNPA since 1978. What is different now? Proponents of the waiver also argue that the EU is entitled to be exempt from NNPA requirements because of EURATOM safeguards and its exemplary nonproliferation record.

Observers of Congressional perspectives argue that a waiver is not politically feasible for the United States at this time. Unlike the Presidential waivers granted on a year-by year basis since 1980 on the basis of EURATOM's good-faith efforts to negotiate a follow-on AFC, once the current agreement lapses a waiver would require the Congress to give its explicit approval. Given the present sense of the Congress, it is politically impossible in the United States for this option to succeed.[19] Under the other

options, Congress could simply not comment on the agreement, allowing it to pass without taking action.

Basically, U.S. opponents of a waiver, particularly those in Congress, are concerned that the waiver might set a bad precedent; other countries might subsequently demand that the United States, *de facto*, renounce control rights over its fissile material exports. Although it might arguably be appropriate for the United States to issue such a waiver to the European Union, the precedent is clearly a concern for many in Congress and in the Clinton administration. Moreover, the waiver was already explicitly rejected by U.S. Secretary of State Warren Christopher in June 1994.

Case-by-Case Review

The second option that some in the United States, including Congress, advocate is that the United States should obtain case-by-case consent rights. Under this option, the United States would have the authority to deny reprocessing within the EU, transfers of U.S.-origin spent fuel from the EU to third parties, and transfers of spent fuel to EURATOM from third parties. Proponents argue that this would allow the United States veto power over the trade of such material and the United States would gain control over the fuel cycle, particularly plutonium.

Europe has refused to jeopardize its nuclear industry by subjecting itself to consent rights that might be revoked or delayed at any time in the future. Even if Europe were willing to consider this arrangement, it is concerned that a critical industry and an important source of trade could be at risk for the duration of the new AFC based on changes in U.S. domestic politics or policy. The demand for strict application of the NNPA requirement for consent rights raises the spectre in Europe of U.S. unreliability as a trade and strategic partner. An aggressive approach to consent rights threatens to further marginalize the United States as a partner in nuclear cooperation. If the United States is not viewed as a serious partner in the conduct of legal, peaceful nuclear trade, it will have difficulty claiming the right to establish the rules of cooperation, such as the terms and stringency of safeguards.

Some argue that the United States might wish the agreement to lapse rather than compromise case-by-case review. The proponents of this view argue that this would raise the issue of plutonium as a fuel source to a higher political level and force serious consideration of the inherent risks of plutonium trade. According to this argument, the collapse of the U.S.-EURATOM agreement would be better than a compromise on other terms. (Potential consequences of a collapse were discussed in a previous section.) It is the judgement of the authors that such a strategy would result in the attainment neither of a new AFC nor of a renewed dialogue on nuclear energy policy.

Long-Term Programmatic Approval

The United States has offered long-term "programmatic approval" to the European Union. Under this option, the United States would have consent rights and

could then voluntarily approve selected activities covered by the agreement for the term of the accord. In essence, EURATOM would grant the U.S. the legal right of consent and, implicitly, the right of revocation, and the U.S. would extend an equal, indeed reciprocal, right to EURATOM to pursue its nuclear energy policy free from interference. As mentioned earlier, this is generally the same arrangement that the United States and Japan reached in their 1988 nuclear cooperation agreement. Proponents argue that this would meet the law of the NNPA, which maintains consent rights, but would also recognize Europe's nonproliferation record and its interests in nuclear energy. Programmatic approval could thus be considered a recognition of Europe's record and of its leading role—past, present, and projected—in nonproliferation controls, including but not limited to the NPT and the Nuclear Suppliers Group.

It seems clear that revocation of programmatic approval would not happen easily and certainly not as a means of influencing the dialogue on U.S. and European nuclear energy policies. As argued in the *Atlantic Council Bulletin*, the U.S. could suspend its approval "under very compelling circumstances of a national security or non-proliferation nature, such as a material breach by the E.U. or a EURATOM member state of an important nonproliferation commitment such as the NPT."[20] As the author notes, ultimately, for long-term programmatic approval to have any potential for becoming the basis for a successor AFC, Europe must trust that the United States will not unilaterally and arbitrarily try to force Europe to give up plutonium as a potential energy source.

Opponents, however, have challenged programmatic approval as being illegal (as discussed earlier). Others argue that programmatic approval sets, or reenforces, a misguided precedent that would approve plutonium as a commodity and potentially increase trade and the availability of fissile material that could be used to make nuclear weapons. Although such a precedent has already been set by the U.S. programmatic consent agreements for cooperation with Japan and, to a lesser extent, Norway and Sweden, opponents argue that a similar agreement would reenforce this precedent and thus recognize plutonium as a legitimate fuel source. It should be noted again that this approach to the AFC not only misconstrues the agreement's intent, but flies in the face of the official and long-standing U.S. policy.

European negotiators have so far not responded favorably to the U.S. offer of programmatic consent because the United States would still be able to suspend its long-term approval. However, it should be noted that the U.S. has repeatedly demonstrated its commitment to the peaceful uses of nuclear energy and to stability in nuclear trade. Moreover, the U.S.-Japan agreement and those with Norway and Sweden demonstrate U.S. ability to arrive with those states at satisfactory agreements which meet the concerns of both sides.

Urgency of the Situation

The governments of Europe and the United States need considerable time to approve a new AFC. In the United States, for example, the NNPA requires the Congress to review an agreement for cooperation to ensure that it satisfies nine criteria stipulated in the law. The NNPA allows the relevant House and Senate Committees to review the agreement for 30 days of continuous session, after which the agreement goes to the full Congress for 60 days of continuous session. Unless Congress passes a joint resolution rejecting the agreement during that 60-day period, it is automatically approved.[21] Of course, the legislative timetable stipulated by the NNPA fails to account for the lengthy negotiating process and the time consuming interagency coordination that precede submission to Congress. For these procedural reasons, the new AFC must be completed long before the end of 1995 when the original AFC expires.

The U.S. government appreciates the urgency of maintaining nuclear cooperation with EURATOM. In President Clinton's own words:

> I believe that it is essential that cooperation between the United States and EURATOM continue, and likewise, that we work closely with our allies to counter the threat of proliferation of nuclear explosives. Not only would a disruption of nuclear cooperation with EURATOM eliminate any chance of progress in our talks with that organization related to our agreements, it would cause serious problems in our overall relationships. Accordingly, I have determined that failure to continue peaceful nuclear cooperation with EURATOM would be seriously prejudicial to the achievement of U.S. nonproliferation objectives and would jeopardize the common defense and security of the United States.[22]

The primary disagreement within the United States as well as between the United States and EURATOM is not over the value of a United States-EURATOM agreement; the primary disagreement lies in the precise form of such an agreement.

Conclusions and Recommendations

The United States and Europe must find common ground to conclude a successor agreement to the 1960 AFC. It is not politically feasible for the United States to make exceptions to its proliferation laws, while Europe cannot be expected to allow the United States to control its energy policy and programs. As a first step toward a compromise, governments on both sides of the Atlantic must recognize the constraints that the other faces.

The United States must effectively neutralize or overcome Europe's concern that the United States, under a new agreement based on the NNPA, could hold at risk Europe's energy future. Europe has a demonstrable nonproliferation record and is understandably offended when the United States unilaterally attempts to impose its legislation on Europe's efforts to achieve energy security.

Europe, however, must also respect the constraints of U.S. law. A congressionally authorized waiver of the consent requirements of the 1978 NNPA

would set a precedent that other countries, including Japan, could then also demand from the United States. As long as Europe believes that the United States will not unreasonably revoke the long-term programmatic approval, it should renew the U.S.-EURATOM agreement based upon this solution.

Through Secretary of State Warren Christopher's June 17, 1994, letter to Marcelino Oreja (the energy commissioner of the European Union), the United States has already offered long-term programmatic approval, which is as far as the current political environment and U.S. law will permit. The United States should continue to press negotiating sessions, and EURATOM should understand that this is the best available solution. The current impasse is not a zero-sum game in which one side stands to lose more than another. Both sides have much too much to lose if the agreement collapses.

Ultimately, Europe must believe that the United States will not use this agreement or any mechanism under it as a lever to force Europe to abandon the plutonium fuel cycle. As mentioned earlier, some argue that a lapse in this agreement would "clear the air" and force more serious political consideration of the future of plutonium. Although plutonium carries great proliferation risks, allowing the U.S.-EURATOM AFC to collapse is not the way to control its risks. A lapse in the agreement would amount to a literal sanction against the export of U.S. nuclear material to the EU and cooperating third countries. Rather than force the EU to the negotiating table, this action would be just as likely to provoke a degenerating series of retaliations and countermeasures in nuclear trade, souring cooperation between the parties involved. The United States, in imposing sanctions against both Japan and Europe, would face the prospect of trying to control plutonium unilaterally without its traditional allies. Rather than clear the air, allowing the agreement to lapse would poison the atmosphere of effective cooperation, which is critical to resolving this issue, the future of plutonium, and nonproliferation as a whole.

The United States must assure the EU that it does not intend to unilaterally attempt to manipulate Europe's fuel cycle. In turn, Europe, which clearly understands the dangers of the diversion of plutonium, needs to reassure the United States that it is aware of these risks.

The U.S.-EURATOM agreement should not be used in an attempt to obtain leverage in the long-standing disagreement between the parties regarding their respective nuclear fuel cycle policies. The issue of the future of plutonium use should therefore be separated from the EURATOM negotiations, discussed directly on its own merits, and should not be used to hold this agreement hostage to a unilateral U.S. nonproliferation agenda.

In fact, renewal of the U.S.-EURATOM agreement in some form is a necessary *precondition* for any meaningful discourse on the future of plutonium. Merely establishing the dialogue in and of itself would send a signal that each side respects the

other's concerns, would help increase the chances for U.S.-EURATOM agreement renewal, and would make a long-term solution to the future of plutonium more viable.

Cooperation among Western countries is critical for a solution to the problem of nuclear proliferation. Although disagreement clearly exists between the United States and the EU, a compromise solution is available. Ultimately, without an agreement, cooperation on international nuclear trade will lapse and the viability of the nonproliferation regime will be harmed at a time when its entire future is being reevaluated. This is a risk that is not worth taking.

Time is of the essence. A failure to reach a new AFC before the lapse of the 1960 agreement will disrupt U.S.-European nuclear trade, potentially harming transatlantic relations, and will damage Western nonproliferation objectives.

Although long-term programmatic approval seems to be the best solution for both sides, it is essential that an agreement in principle in some form be reached quickly. The parties are encouraged to draw on the U.S. and EURATOM experience and on the relevant agreements with Japan, Australia, and Canada in devising a suitable formulation for the new AFC. If negotiations are allowed to extend further into 1995, efforts to extend the NPT indefinitely may be complicated and the U.S.-EURATOM agreement may expire, causing even further damage to nonproliferation objectives independent of the NPT. Both the United States and Europe must address this issue urgently.

Notes

1. Under Article X.2 of the 1970 NPT, "Twenty-five years after the entry into force of the Treaty, a conference shall be convened to decide whether the Treaty shall continue in force indefinitely, or shall be extended for an additional fixed period or periods. This decision shall be taken by a majority of the Parties to the Treaty." That conference is scheduled to be held in New York from April 17-May 12, 1995. The NPT is generally considered to be the cornerstone of all nonproliferation efforts.

2. Indefinite extension of the NPT may be more difficult to achieve than many assume. See, for example, Lewis Dunn, "NPT 1995: Time to Shift Gears," *Arms Control Today* 23, no. 9 (November 1993), 14-19; and Alexander T. Lennon, "The 1995 NPT Extension Conference," *The Washington Quarterly* 17, no. 4 (Autumn 1994), 205-227. Also, see recent reports from the Third NPT Preparatory Committee—for example, "Western Group Battles Iran at Third NPT PrepCom Session," *Nucleonics Week* 35, no. 8 (September 22, 1994), 9-10.

3. Article IV.2 of the NPT states that "All the Parties to the Treaty undertake to facilitate, and have the right to participate in, the fullest possible exchange of equipment, materials and scientific and technological information for the peaceful uses of nuclear energy. Parties to the Treaty in a position to do so shall also co-operate in contributing alone or together with other states or international organizations to the further development of the applications of nuclear energy for peaceful purposes, especially in the territories of non-nuclear-weapon states party to the Treaty, with due consideration for the needs of the developing areas of the world."

4. "Iran May Withdraw from NPT Over Western Trade Barriers," *Nucleonics Week* 35, no. 8 (September 22, 1994), 1,8.

5. Others point out, however, that almost all Japanese spent fuel subject to current reprocessing contracts will be shipped to Europe before the current AFC expires, rendering hollow the threat of a U.S. veto. According to some, fabrication of mixed-oxide fuel assemblies using separated plutonium could be carried out without consulting the United States after 1995. This point was argued in the June 20, 1994 edition of *Nuclear Fuel* 19, no. 13 (June 20, 1994), 11.

6. This testimony was presented at a hearing on the Agreement for Cooperation on Peaceful Uses of Atomic Energy Between the United States and the European Atomic Energy Community (EURATOM) before the Senate Committee on Energy and Natural Resources on September 29, 1994.

7. Section 123 of the Atomic Energy Act of 1954 as amended by Section 401 of the Nuclear Non-Proliferation Act of 1978.

8. A natural byproduct of the fission of uranium, plutonium can be separated from nuclear spent fuel and can be subsequently reused in other nuclear reactors. This plutonium fuel cycle, though relatively expensive, may be a promising fuel source for the future. Unfortunately, plutonium can also be used in atomic weapons. The prospect of the diversion of plutonium to nuclear weapons explains why the United States currently opposes the recycling of plutonium and wants the authority to veto its separation and retransfer. Nonetheless, both Japan and Europe believe the plutonium fuel cycle is a promising energy source, and Europe already enjoys a considerable business in reprocessing plutonium for Japanese reactors as well as its own.

9. For example, see the letter of August 5, 1994 from Representatives Tom Lantos (D-Calif.) and Howard Berman (D-Calif.) to Secretary of State Warren Christopher and Secretary of Energy Hazel O'Leary.

10. See appendix.

11. Section 131b(2) of the Atomic Energy Act (amended) states that in determining whether to allow a "subsequent arrangement" for reprocessing "...consideration will be given to whether or not the reprocessing or retransfer will take place under conditions that will ensure timely warning to the United States of any diversion well in advance of the time at which the non-nuclear weapon state could transform the diverted material into a nuclear explosive device."

12. Senate Subcommittee on Energy, Nuclear Proliferation, and Federal Services of the Committee on Governmental Affairs, *Legislative History of the Nuclear Nonproliferation Act of 1978, H.R. 8638 (Public Law 95-242)*, report prepared by the Congressional Research Service, Library of Congress, 96th Cong., 1st sess., 1979, Committee Print.

13. Ibid., 416.

14. Ibid., 420.

15. David McAlees, "U.S.-EURATOM Agreement—A U.S. Industry Perspective." (Siemens Power Corporation, Nuclear Division Headquarters, 1994). Presented at the Nuclear Energy Institute Fuel Cycle 94 Conference, Boston, Mass., March 21, 1994.

16. *Cranston v. Reagan*, United States District Court, District of Columbia, June 20, 1985. 611 Federal Supplement 247, at *252-53* (D.D.C. 1985).

17. Ibid.

18. *Congressional Record*, 100th Congress, 2nd sess., 1988, vol. 134, p. S4521-2. General Accounting Office Legal Memorandum from Deputy Controller to the Honorable Dante B. Fascell, Chairman Committee on Foreign Affairs, House of Representatives.

19. For example, see the August 19, 1994 letter to Secretary of State Warren Christopher and Secretary of Energy Hazel O'Leary from 25 members of the House.

20. Harold Bengelsdorf, "The U.S.-EURATOM Agreement: Avoiding a Breakdown in Cooperation," *Atlantic Council Bulletin* 5, no. 7 (July 22, 1994), 6.

21. Section 130 of the Atomic Energy Act, added by Section 308 of the Nuclear Non-Proliferation Act.

22. *Public Papers of the Presidents*, "Message to the Congress on Nuclear Cooperation with EURATOM Body," March 9, 1994. 30 Weekly Comp. Pres. Doc. 485.

APPENDIX

A Chronology

1954	The Atomic Energy Act. Replaced the act of 1946.
1959	Joint Program Agreement for Cooperation Between the U.S. and EURATOM Concerning Peaceful Uses of Atomic Energy.
1960	Additional Agreement for Cooperation Between the U.S. and EURATOM Concerning Peaceful Uses of Atomic Energy. Expires December 31, 1995.
1968	Signature of the Treaty on the Non-Proliferation of Nuclear Weapons. The treaty entered into force on March 5, 1970.
1978	The Nuclear Non-Proliferation Act
1984	Agreement for Cooperation Between the U.S. and the Government of Sweden Concerning Peaceful Uses of Atomic Energy. Revised Agreement for Cooperation Between the U.S. and the Government of Norway Concerning Peaceful Uses of Atomic Energy. These were the first U.S. AFC's to incorporate long-term programmatic consent.
1988	Agreement for Cooperation Between the U.S. and the Government of Japan Concerning Peaceful Uses of Nuclear Energy.

1993

September 27	President Clinton's address before UN General Assembly. White House fact sheet on U.S. nonproliferation policy released.
October 20	President Clinton outlines his nonproliferation policy to Congress.

1994

January 17	Energy Secretary Hazel O'Leary submits to Congress approval for transfer of spent nuclear fuel from Switzerland to the United Kingdom for reprocessing.
January 21	Letter from Arms Control and Disarmament Agency (ACDA) Director John Holum to Representative Tom Lantos (D.-Calif.), supporting O'Leary and contending that to do otherwise "would be perceived as revising the nature of U.S.-Swiss and U.S.-EURATOM nuclear cooperation relationships."

March 2	Letter from European Energy Commissioner Abel Matutes to Secretary of State Warren Christopher requesting a waiver of consent requirements as part of a new U.S.-EURATOM Agreement for Cooperation.
March 9	President Clinton signs an executive order to extend nuclear cooperation with EURATOM until March 10, 1995.
May 16	Letter from Senator J. Bennett Johnston (D-La.) to Secretary O'Leary urging the Department of Energy's rapid approval of the State Department's response to Commissioner Matutes's letter.
June 6	Hearing of Joint Economic Committee chaired by Representative Fortney (Pete) Stark (D-Calif.) to discuss the plutonium trade.
June 17	Secretary Christopher responds to Commissioner Matutes's request, stating that Congress will not accept an agreement that waives the requirements of the NNPA, but offers long-term programmatic consent as an alternative.
August 5	Representatives Tom Lantos and Howard Berman (D-Calif.) send letter to Secretary O'Leary questioning long-term programmatic consent and urging establishment of "meaningful" U.S. consent rights.
September 29	Senate Energy Committee hearing on renegotiation of U.S.-EURATOM agreement.

About the Contributors

James R. Schlesinger, the project chairman, has been a CSIS counselor since 1979. He was secretary of defense from 1973 to 1975 and secretary of energy from 1977 to 1979.

Dan Gouré, the project director, is the deputy director of Political-Military Studies at CSIS.

Alexander T. Lennon and **David C. Earnest,** the project coordinators, are research assistants in Political-Military Studies at CSIS.

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February 29, 1996

The Honorable Ted Stevens
Chairman
Permanent Subcommittee on Investigations
Governmental Affairs Committee
United States Senate
Washington, D.C. 20510

Dear Mr. Chairman:

Per your request, I would like to respond to the claims made by Paul Leventhal at yesterday's hearing on the U.S.-Euratom nuclear trade agreement regarding Mr. James Schlesinger's relationship to BNFL.

James R. Schlesinger is indeed a member of the Board of Directors of BNFL Inc., but Mr. Leventhal apparently is confusing the American subsidiary with the British parent. The American subsidiary was formed to assist in nuclear cleanup operations in the United States, employing technologies developed earlier for similar cleanup operations in Britain. A recent report by the National Research Council stated that the use of such technologies could cut in half the anticipated cost of cleaning up similar U.S. sites and facilities.

It might also be noted that as Secretary of Energy Mr. Schlesinger was instrumental in preventing commercial reprocessing activities here in the U.S.

Mr. Schlesinger also serves as a Fellow of the National Academy of Pubic Administration and a member of the American Academy of Diplomacy.

In addition to Mr. Schlesinger, you may be interested to know that other U.S. members of BNFL Inc.'s board include the Honorable Elliot Richardson, former Secretary of Defense, the Honorable Robert Michel, former Republican Leader in the U.S. House of Representatives, and Dr. Gail de Planque, a former commissioner for the Nuclear Regulatory Commission.

I appreciate your giving BNFL Inc. the opportunity to respond and respectfully request that this letter be submitted for the record.

Sincerely,

Marilyn F Meigs

Marilyn Meigs
Vice President
Fuel Cycle & Materials Processing

cc: The Honorable John Glenn

TESTIMONY OF MARVIN S. FERTEL
VICE PRESIDENT - NUCLEAR ECONOMICS AND FUEL SUPPLY
NUCLEAR ENERGY INSTITUTE

Mr. Chairman and Members of the Committee:

I am Marvin Fertel, vice president of nuclear economics and fuel supply at the Nuclear Energy Institute (NEI). I am pleased to appear before you today to present the U.S. commercial nuclear energy industry's views on the U.S.-EURATOM agreement for peaceful nuclear cooperation.

NEI represents approximately 275 companies and organizations worldwide in the nuclear energy industry, including all U.S. electric utilities that operate nuclear power plants, nuclear plant equipment suppliers, engineering/construction firms, nuclear fuel cycle companies, suppliers of radionuclides and radiopharmaceuticals, law firms, consulting firms and labor unions. Our member companies believe that a strong non-proliferation regime is vital to U.S. national security and global nuclear commerce. The industry's philosophy is not to balance these two considerations. Rather, NEI believes a strong multilateral non-proliferation regime is the underlying foundation that is essential for peaceful nuclear commerce and the economic benefits such commerce provides to the United States.

The new U.S.-EURATOM agreement is properly viewed as a means to strengthen both the economic benefits and non-proliferation regime. Therefore, the commercial nuclear industry believes Congress should support this new agreement for cooperation between the United States and EURATOM. Failure to bring the agreement into force or an effort to restrict the ability of the Executive Branch to implement its terms would be seriously damaging to the non-proliferation and civilian nuclear commerce objectives.

U.S.-EURATOM Agreement Continues Long-Standing Policy

The U.S.-EURATOM agreement and other bilateral and multilateral agreements, such as the Treaty on the Non-Proliferation of Nuclear Weapons (NPT), have

allowed an economically successful nuclear trading relationship to flourish, consistent with effective safeguards against proliferation.

The pre-existing U.S.-EURATOM agreement for peaceful nuclear cooperation expired December 31, 1995. The new agreement is necessary for the United States to continue to play a leadership role in peaceful nuclear cooperation and non-proliferation policy. Failure to renew the agreement with EURATOM—our closest ally in non-proliferation efforts—would have a negative impact on U.S. leadership in the eyes of many nations. Moreover, U.S. credibility in foreign policy would suffer as would our reputation as a reliable, global supplier of civilian nuclear products and services.

Without an agreement, U.S. and European political relations developed over the past 50 years would suffer a serious setback. A break in the U.S.-EURATOM relationship would undermine a critical bond of trust and cooperation between close allies at a time when new challenges threaten global security in the post-Cold War world.

Without a new U.S.-EURATOM agreement, U.S. companies could not export to EURATOM member nations major nuclear power plant components or uranium produced and/or processed in the United States. Furthermore, U.S. equipment, materials, and processing services would be less desirable to third countries, who would be seriously restricted in their use, transport and processing as a result of an absence of a U.S. agreement with EURATOM.

In the United States, the impact of nonrenewal of the agreement on the 110 operating nuclear power plants would be destabilization of the international fuel supply market, and the likelihood of ensuing increases in the cost of fuel and decreases in reliability of their fuel supplies. Nuclear power is an important component of America's energy portfolio, generating more than 20 percent of our electricity—enough to serve the equivalent of 65 million homes. Nuclear power plants also play a critical role for electric utilities in reducing harmful air emissions

to meet standards established in the Clean Air Act. Nuclear energy is the single largest contributor to reduced carbon dioxide emissions from the electric utility industry.

Failure to renew the U.S.-EURATOM agreement would result in a significant loss in U.S. trade, and cause significant direct dollar and employment losses in the United States.

Over 1993-1995, U.S. companies reported an average of more than $325 million in nuclear-related revenues and about $214 million in fuel and related processing services to EURATOM nations. Engineering/reactor/technical services to European Union countries totaled $80 million. Commercial nuclear business in EURATOM nations thus represents a considerable amount of the $4.4 billion in U.S. nuclear-related revenues in 1994—one-third of which is in export-related business. The nuclear industry generates tens of thousands of jobs across the United States. In 1994, for example, there were 15,000 jobs directly related to nuclear commerce in Pennsylvania, California, Ohio and Kentucky.

Without the agreement, the United States would not be able to export nuclear materials or major nuclear power plant equipment to the European Union. But the importance of the agreement in maintaining the position of the United States as a reliable worldwide supplier goes well beyond any published statistics on U.S.-EURATOM trade.

The U.S.-EURATOM relationship helps maintain a strong non-proliferation infrastructure that advances trade in civilian nuclear commerce. If the largest and most advanced nuclear power nations in the world cannot agree on the conditions for nuclear commerce, it would set a bad precedent for the rest of the world on non-proliferation issues.

Trade with Japan would be adversely affected as well because Japan wants to keep open the option of shipping fuel from its nuclear power plants for reprocessing in

Europe. Without a new agreement, Japan is likely to reassess the degree to which it will acquire enrichment services in the United States and it might be tempted to accelerate its own national reprocessing program. Using data supplied by OECD, we estimate that expansion of Japan's nuclear energy program could produce 100,000-200,000 U.S. jobs during construction and startup and up to $800 million annually during the life of the facilities.

No group wants an international commitment to plant safety, strong safeguards and non-proliferation more than the nuclear industry. The benefits of expanded nuclear power are significant as the global need for electricity continues to grow at a rapid pace. Nuclear power should provide a portion of that electricity demand while improving the quality of life and reducing atmospheric emissions.

The Agreement Strengthens Nuclear Non-Proliferation Goals

The agreement enhances the nuclear non-proliferation goals of the United States by ensuring that all nuclear materials exported from the United States are subject to stringent international safeguards.

The agreement includes all of the non-proliferation controls required by U.S. law, and includes controls that extend beyond legal requirements. The pre-existing agreement contained only three basic assurances:

- U.S.-origin materials and equipment would be subject to EURATOM safeguards;
- no U.S.-origin materials and equipment would be used for military purposes; and
- no U.S.-origin materials and equipment would be retransferred outside of EURATOM without U.S. approval.

By contrast, the proposed agreement provides all of the guarantees and controls

required by the Nuclear Non-Proliferation Act of 1978 (NNPA) for new agreements, including full-scope safeguards in non-nuclear weapons states, safeguards in perpetuity, assurances from EURATOM that U.S.-obligated materials will be used only for peaceful and non-explosive uses, guarantees of adequate physical protection for materials and equipment of U.S. origin and the requisite U.S. consent rights over retransfers, reprocessing, enrichment and the alteration in form or content and storage of sensitive nuclear material.

NEI recognizes the unequivocal commitment of the EURATOM member countries to a stringent non-proliferation regime under EURATOM and International Atomic Energy Agency safeguards. There is a broad and deep sharing of non-proliferation goals between the United States and EURATOM. This common understanding is explicitly reflected in the joint Declaration on Non-Proliferation Policy attached to the agreement. Both are strong supporters of non-proliferation goals across a wide range of issues, such as the Nuclear Non-Proliferation Treaty, IAEA safeguards, and the Nuclear Suppliers Group.

Some have argued that the U.S.-EURATOM agreement promotes reprocessing, but the reality is that the decision whether to reprocess is driven by economics, waste management practices, attitudes toward conserving resources and national policy. Nations like France and Japan have virtually no indigenous energy resources, so reprocessing spent nuclear fuel gives both countries a greater measure of energy independence. These are decisions that EURATOM countries—as the United States would—regard as sovereign.

Approval of the U.S.-EURATOM agreement will ensure open communication between the United States and the European Union. With an agreement, the United States has a window and influence into European nuclear programs. Without the agreement, U.S. influence will be radically diminished.

Some opponents of the agreement claim that U.S. control over weapons-useable materials has been excluded from the agreement, but it does in fact provide for these

controls. The United States has given its consent to EURATOM to reprocess and to alter in form and content sensitive nuclear materials, subject to certain conditions. The United States may unilaterally suspend this consent in any circumstance that would result in increased risk of nuclear proliferation or threat to U.S. security. The previous U.S.-EURATOM agreement contained no such U.S. consent rights over reprocessing, alteration in form and content, or storage of plutonium and other weapons-usable materials.

Thus, the new U.S.-EURATOM agreement would, if it became effective, for the first time establish U.S. consent over reprocessing, alteration or storage for U.S.-obligated plutonium already in EURATOM as well as plutonium separated from fuel that will be exported from the United States to EURATOM in the future.

The United States provides long-term, advance consent for the retransfer of nuclear materials and equipment to a specific list of third countries, but this approval is not a blanket approval, nor is it irrevocable.

EURATOM must provide the United States with assurances and information on the safeguards, and advance notice of the addition of nuclear facilities to the approval list before they are used.

The agreement also includes a guarantee by the non-nuclear weapons states of EURATOM that all of their peaceful nuclear activities will be subject to the full-scope safeguards of the IAEA. All EURATOM states must guarantee that no nuclear material or equipment transferred under the agreement will be used for research on or development of a nuclear explosive device or for any other military purpose.

The agreement in no way transfers or delegates U.S. power to determine whether any nuclear activity would be consistent with basic U.S. non-proliferation standards. In fact, U.S. non-proliferation standards are set forth in the agreement itself, and the United States retains complete authority to suspend certain consents if an activity under the agreement is incompatible with U.S. national security or non-

proliferation interests.

There is concern by some groups that, if membership in EURATOM is expanded for former East Bloc countries, the U.S.-EURATOM agreement would provide those nations with access to nuclear weapons materials of U.S.-origin. However, if the EURATOM membership is expanded to include former Soviet satellites, these countries would acquire both the rights *and* obligations of the U.S.-EURATOM agreement. The likely candidates for membership already are parties to the Nuclear Non-Proliferation Treaty and accept International Atomic Energy Agency safeguards on all of their nuclear activities. When a nation joins EURATOM, it must abide by the agreement and accept EURATOM safeguards on its activities.

In addition, the European Union imposes strict non-proliferation requirements as a condition for membership. Any nuclear activity in a EURATOM member state would be subject to the stringent non-proliferation, safeguards, and physical protection requirements of both the European Union and the agreement.

In short, for the United States, the new agreement incorporates all of the nonproliferation conditions required by the Atomic Energy Act and NNPA, and provides a stable and predictable basis for nuclear commerce and cooperation with the European Union.

Conclusion

The U.S.-EURATOM agreement for peaceful nuclear cooperation has been signed by representatives from both the United States and the European Union. Careful examination of the agreement by the Executive Branch—including the Secretary of Energy, the Secretary of State, the Department of Defense, the Nuclear Regulatory Commission, and the Director of the Arms Control and Disarmament Agency—concludes that it meets all requirements of U.S. law and that it will not result in an increased risk of nuclear proliferation. Rather, it advances the economic, political and non-proliferation interests of the United States and provides a comprehensive,

long-term framework for nuclear cooperation between the United States and our allies in the European Union.

In 1994, the Nuclear Energy Institute passed a resolution urging the United States and EURATOM to approve a new agreement for peaceful nuclear cooperation that complies with the requirements of the NNPA. The National Association of Regulatory Utility Commissioners, The Energy Council and the Uranium Institute have passed similar resolutions and policy statements in support of the new agreement. I have attached those documents to my statement and ask that they be made part of the record.

Nuclear power must continue to play a vital role in helping the United States and the world meet the rapidly growing need for clean energy supplies. Since the "Atoms for Peace" initiative, the U.S.-EURATOM agreement has fostered growing U.S. trade in peaceful nuclear equipment and materials and nurtured the foundation for a commercial nuclear industry in many European nations. Importantly, the new agreement strengthens the non-proliferation regime that is essential for continued nuclear commerce between the United States and the European Union.

It is appropriate and necessary that Congress support the new U.S.-EURATOM agreement to continue a stable market for nuclear commerce, international security, and a mutual international commitment to nuclear non-proliferation.

NUCLEAR ENERGY INSTITUTE

A RESOLUTION REGARDING
THE US-EURATOM AGREEMENT FOR PEACEFUL NUCLEAR COOPERATION
THE NUCLEAR ENERGY INSTITUTE
November 2, 1994

WHEREAS, the US-Euratom agreement for peaceful nuclear cooperation, which has provided the basis for close international cooperation between the United States and its European allies for 35 years, expires on December 31, 1995;

WHEREAS, a primary basis for this cooperation is a mutual commitment to the international non-proliferation regime, and this agreement and other multilateral arrangements, such as the Treaty on the Non-Proliferation of Nuclear Weapons, have allowed for an economically successful trading relationship to flourish, consistent with effective safeguards against proliferation;

WHEREAS, the uncertainty regarding the fate of this agreement is currently affecting the marketing, manufacturing, planning and fuel procurement strategies for both suppliers and utilities in the US; and

WHEREAS, without a new agreement: (1) US companies would not be able to export to the European Union major nuclear power plant components, or uranium produced or processed in the United States; (2) US technology, materials and processing services would be less desirable to third countries who would be restricted in its use, transport and processing; and (3) the international fuel supply market would be destabilized, likely increasing the cost of fuel for nuclear power plants in the US and decreasing the reliability of their fuel supplies.

THEREFORE, BE IT RESOLVED, that the Nuclear Energy Institute strongly urges both the governments of the United States and the European Union to negotiate and to approve a new US-Euratom agreement for peaceful nuclear cooperation prior to December 31, 1995;

RESOLVED, that the new US-Euratom agreement should comply with the requirements of the Nuclear Non-Proliferation Act of 1978 (NNPA), by utilizing the concept of programmatic consent approval; and

RESOLVED, that recognizing the excellent non-proliferation credentials and maturity of the civilian nuclear industry in the European Union, the agreement should provide long-term predictability and flexibility in satisfying the requirements of the NNPA.

**A Resolution Regarding
the US-Euratom Agreement for Peaceful Nuclear
Cooperation**

WHEREAS, nuclear power generates approximately 20% of the electricity produced in the United States; and

WHEREAS, international events have an effect on the utilities regulated by state economic regulators; and

WHEREAS, international agreements and transactions affecting regulated utilities can have a beneficial effect on electricity rates resulting in economic and employment gain within the states and the nation; and

WHEREAS, the U.S. Euratom agreement for peaceful nuclear cooperation, which has provided the basis for close international cooperation between the United States and its European allies for 35 years, expires on December 31, 1995; and

WHEREAS, a primary basis for this cooperation is a mutual commitment to the international nuclear non-proliferation regime, and this agreement and other multilateral arrangements such as the Treaty on the Non-Proliferation of Nuclear Weapons, have allowed for an economically successful trading relationship to flourish, consistent with effective safeguards against proliferation; and

WHEREAS, the uncertainty regarding the fate of this agreement is currently affecting the marketing, manufacturing, planning and fuel procurement strategies for both suppliers and utilities in the United States; and

WHEREAS, without a new U.S.-Euratom agreement: (1) US companies would not be able to export to the European Union major nuclear power plant components, or uranium produced or processed in the United States; (2) the use of U.S. technology, materials and processing services would be less desirable to third countries who would be restricted in their use, transport and processing; and (3) the international fuel supply market would be destabilized, likely increasing the cost of fuel for nuclear power plants in the U.S. and decreasing the reliability of their fuel supplies; and

WHEREAS, it is in the best interest of both the utilities and the rate payers to have a stable nuclear materials market that makes fuel available at a cost that is internationally competitive; and

WHEREAS, in the view of the Executive Branch of the U.S. government the new U.S.-Euratom agreement is in full compliance with the requirements of the Nuclear Non-Proliferation Act of 1978 (NNPA); and

WHEREAS, the excellent non-proliferation credentials and maturity of the civilian nuclear industry in the European Union is well recognized, the existence of the agreement will promote long-term predictability and flexibility in satisfying the requirements of the NNPA; now, therefore be it

RESOLVED, that the Executive Committee of the National Association of Regulatory Utility Commissioners (NARUC), convened in its 1995 Summer Meeting in San Francisco, California, strongly urges both the governments of the United States and the European Union to negotiate and to approve, prior to December 31, 1995, a new U.S.-Euratom agreement for peaceful nuclear cooperation;

Sponsored by the Subcommittee on Nuclear Issues-Waste Disposal

Policy Statement on the U.S.-Euratom Agreement
Proposed by
New Mexico Representative Bob Light

Honorable Dan Shelley
Texas Senate
Chairman

Honorable Samuel B. Nunez Jr.
Louisiana Senate President
Vice Chairman

Lori Cameron
Executive Director

122 West Carpenter Freeway
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Background

For more than 35 years, the U.S. and the European Atomic Energy Community (Euratom) have been able to maintain close cooperative ties in pursuing the peaceful uses of nuclear energy. Without a bilateral agreement, U.S. trade in nuclear materials, technology and services is prohibited. The Euratom agreement, which expires on December 31, 1995, has allowed an economically successful nuclear trading relationship to flourish, consistent with effective safeguards against proliferation.

Without an agreement, U.S. companies could not export major nuclear power components or uranium produced or processed in the U.S. to Euratom member nations. Furthermore, U.S. products would become less desirable to third countries such as Japan because they cannot be retransferred to Euratom. Trade loss would cause significant dollar and employment losses in the U.S., could increase fuel costs and decrease the reliability of fuel supplies. Even now, uncertainty regarding the outcome of this agreement is affecting the marketing, manufacturing, planning and buying strategies for both suppliers and utilities in the U.S.

Recommendation

The Energy Council believes it is imperative that the United States continues to play a leadership role in peaceful nuclear cooperation and non-proliferation policy. Without a stable, long-term agreement with Euratom, the U.S. will become isolated in its efforts to ensure nonproliferation and its reputation in the international community will be impaired. In addition, both U.S. trade and employment opportunities will suffer, and the cost of electricity from U.S. nuclear plants could potentially increase. The Energy Council strongly recommends that the Clinton Administration and Congress complete a new agreement prior to expiration of the existing agreement.

Disposition

This policy statement, adopted unanimously by the Energy Council on December 4, 1994, shall be distributed to the President of the United States, Secretaries of the State Department and the Department of Energy, the National Security Assistant, Chairman of the Nuclear Regulatory Commission, Director of the Arms Control and Disarmament Agency, Economic Policy Assistant of the National Economic Council, Majority Leader of the U.S. Senate, Speaker of the U.S. House of Representatives and Congressional delegations of The Energy Council's member states.

Lori Cameron, Secretary

The Uranium Institute

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Statement of the Uranium Institute on the negotiations for a new US-Euratom Nuclear Cooperation Agreement

The US-Euratom Nuclear Cooperation Agreement enables trade to take place in US-labelled nuclear materials, equipment and technology between the USA and the European Union (EU). It is of importance not only to the civil nuclear industries of the USA and the EU, but also to the nuclear industries of other countries involved in international nuclear trade with the USA and EU. As the present agreement will expire at the end of 1995, the international nuclear industry is concerned about the apparent deadlock in the negotiations for a new agreement.

It is the view of the civil nuclear industry that multilateral treaties and agreements are the best way to regulate international nuclear trade. Where bilateral agreements (such as the US-Euratom Agreement) are nevertheless required, they should be consistent with existing international commitments, and provide a stable and lasting framework for trade, as the existing US-Euratom Agreement has done in practice for over 30 years. In particular, they should be consistent with the objectives of the current non-proliferation regime, as set out in the Nuclear Supplier's Guidelines and the Treaty on the Non-Proliferation of Nuclear Weapons (NPT).

As was demonstrated by the recent Uranium Institute statement to the 1995 NPT Conference, the civil nuclear industry supports the indefinite extension of the NPT because it provides the stable framework necessary for the longer term planning of nuclear investments and trade. If there were no agreement between the US and Euratom negotiators on a new US-Euratom Agreement before the NPT Conference takes place in April 1995, this could be detrimental to efforts to extend the NPT for an indefinite period, for the benefits to the industry of such extension would be seriously reduced.

Nuclear power has a vital role to play in helping to meet the world's rapidly growing need for clean and safe energy supplies. However, if long-term contracts for nuclear trade cannot be concluded, or if their implementation is at risk of being impeded by uncertainties in the political framework in which this trade is carried out, it will not be possible to make the investments which are necessary for the continued development of civil nuclear power.

The Uranium Institute therefore calls on the parties directly involved in negotiating a new US-Euratom Agreement to make every effort in the time remaining to reach agreement on the outstanding issues.

November 1994

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Testimony of Paul Leventhal
President, Nuclear Control Institute
before the
U.S. Senate Committee on Governmental Affairs
on
Proposed U.S.-EURATOM Nuclear Cooperation Agreement
Wednesday, February 28, 1996

Overview and Summary

Mr. Chairman and Members of the Committee: Thank you for this opportunity to testify on the proposed agreement for nuclear cooperation between the United States and the European Atomic Energy Community (EURATOM). I am Paul Leventhal, president of the Nuclear Control Institute, a non-profit research center on nuclear proliferation problems. I am accompanied by Eldon Greenberg, counsel to the institute, who is a partner in the law firm of Garvey, Schubert & Barer. Daniel Horner, the institute's deputy director, assisted in the preparation of this testimony.

The Committee, which has had a long and distinguished involvement in nuclear proliferation issues, is to be commended for holding a hearing on the proposed U.S.-EURATOM agreement and its many serious implications for long-term U.S. security interests. I would like to express my special appreciation to Chairman Stevens and Senator Glenn for their initiative in convening this hearing and to Senator Glenn in particular for his two decades of leadership in seeking to prevent the spread of nuclear weapons.

There are two basic and closely related questions that Congress should ask as it considers the proposed U.S.-EURATOM agreement. The first is whether the agreement meets the requirements of U.S. law -- in particular, the Nuclear Non-Proliferation Act of 1978 (NNPA). The second question is whether the agreement in its present form serves U.S. national-security interests. In the view of the Nuclear Control Institute, the answer to both questions is clearly "no," and we propose that the agreement in its present form be rejected or, at a minimum, be approved with conditions that must be met before the agreement can come into force.

My testimony concludes with a list of conditions that have been proposed by six organizations in a letter to Congressional leaders released at a press conference last Friday. These six organizations -- Business Executives for National Security, Center for Security Policy, Greenpeace International, Middle East Data Project, Natural Resources Defense Council, and Nuclear Control Institute -- represent a full range of viewpoints on national security and non-proliferation issues. Indeed, I think it fair to say that there is not a single

member of the Senate who does not fall within the political spectrum represented by these six organizations. Therefore, I ask that their joint letter, and related materials, expressing deep concerns about the agreement and proposing conditions to mitigate damage to vital U.S. interests. be inserted in the hearing record and be given every consideration by this committee. I also submit for the record a detailed analysis of the agreement prepared by Mr. Greenberg for the Nuclear Control Institute, which provides the legal basis for the coalition's position and for the specific proposals for remedial action contained therein. In addition, a senior policy analyst of the Heritage Foundation also has publicly criticized the agreement and has embraced the remedial approach outlined in the groups' letter.

Mr. Chairman, this agreement must be scrutinized in the context of the NNPA. The NNPA was drafted by this Committee and enacted for the purpose of ensuring that U.S. transfers and re-transfers of nuclear materials, equipment, and technology do not contribute to the development of nuclear weapons by additional states or terrorist groups. The Act was a response to India's nuclear test in 1974 (which was made possible by a U.S. export of heavy water to that country) and to growing international commerce in plutonium, separated from U.S.-origin nuclear fuel after use in U.S.-supplied nuclear reactors. The NNPA established unambiguous criteria for U.S. nuclear transfers and for continuing controls over use and re-transfers of U.S.-origin nuclear materials, technology and equipment that could be applied to manufacture of nuclear weapons.

The underlying premise of the NNPA was that nuclear proliferation poses such a serious threat that nuclear exports should not be permitted in the absence of rigorous controls over transfers, use, and re-transfers of potentially weapons-usable nuclear items. A key element of the controls mandated by the NNPA was a set of strict criteria that would govern U.S. negotiation and re-negotiation of agreements for nuclear cooperation with other nations and groups of nations, including EURATOM.

Unfortunately, the need for such rigorous enforcement is by no means universally held. Representatives of the nuclear industry and some agencies of the Executive Branch -- in both Republican and Democratic administrations -- have resisted enforcement of the NNPA and other non-proliferation laws. This is especially evident in the unraveling of the NNPA through a succession of nuclear-cooperation agreements submitted to Congress that depart further and further from the act's strict requirements. The proposed agreement with EURATOM is but the latest and worst example of this dangerous trend.

Nuclear proponents also have waged all-out campaigns against improvements in these laws. Recent examples include Executive Branch and industry opposition to congressional efforts to reform U.S. export controls in 1992, in the wake of revelations about Iraq's nuclear-weapons program, and their current efforts to persuade the President to waive sanctions that should be imposed upon China pursuant to the Nuclear Proliferation Prevention Act of 1994, for China's supply of uranium-enrichment technology to Pakistan. Our institute has strongly supported the efforts of Senator Glenn to sponsor and secure enactment of the legislation and now to press the Administration to adhere to it.

These same voices are now decrying any effort to improve the deeply flawed U.S.-EURATOM agreement. They argue that we can't afford to upset relations with close

European allies or to jeopardize nuclear trade with them. Others see the threat of nuclear proliferation and nuclear terrorism as being on the rise, requiring, at the very least, maintenance and enforcement of existing statutory controls on the dissemination of U.S.-origin, weapons-usable nuclear material. That is our view, Mr. Chairman, and I will seek to show why it should be the view of this Committee and this Congress.

The Dangers of Commerce in Plutonium and Highly Enriched Uranium

Plutonium and highly enriched uranium (HEU) are nuclear explosive materials, the essential ingredients of nuclear weapons. Some countries, including several of the members of EURATOM, use these materials in their civilian nuclear programs. Tons of plutonium will be separated from spent nuclear fuel in Britain and France to be used in nuclear power programs in Europe and Japan. But bombs powerful enough to destroy a city can be made with less than 15 pounds of plutonium. The existing system of international "safeguards" (inspections, audits, and containment and surveillance measures) cannot detect such small losses of plutonium from commercial bulk-handling plants.[1]

Because of the proliferation dangers of civilian use of plutonium, the United States abandoned this aspect of its nuclear power program over a decade ago. But European plutonium programs have plowed ahead and are now dramatically increasing the amount of weapons-usable nuclear material in civilian commerce. As they do, the chances increase that some of it will escape from national and international controls and fall into the wrong hands. By the year 2000, there will actually be more separated plutonium in civilian commerce than now contained in all of the world's nuclear arsenals, thanks to EURATOM's zeal as the world's foremost plutonium purveyor.

In considering this agreement, it is important to know that some 86 percent of all plutonium to be separated from spent fuel in the world between 1990 and 2002 will be processed in EURATOM in British and French plants. Three-quarters of the plutonium now being reprocessed in EURATOM is of U.S. origin and is, therefore, subject to U.S. statutory controls.

Since the United States treats the group of nations that makes up EURATOM as a single country, U.S. nuclear material and other items can be transferred freely across national borders within EURATOM. Therefore, protection and tracking of nuclear material will be only as strong as the weakest link. Nuclear controls -- material accounting, physical security, and export controls -- are not uniformly high throughout EURATOM. This problem will worsen as EURATOM expands to include former East Bloc countries, where nuclear controls are the weakest and where reports of smuggling of nuclear materials from Russia and other former Communist countries are numerous.

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[1] Marvin Miller, "Are IAEA Safeguards on Plutonium Bulk-Handling Facilities Effective?" August 1990; Paul Leventhal, "IAEA Safeguards Shortcomings---A Critique," September 1994.

The Basic Flaw of the Agreement: Failure to Include U.S. Consent Rights

The NNPA establishes a finely tuned system of U.S. "consent rights" over activities involving U.S.-origin facilities, equipment, and materials -- that is, a U.S. nuclear trading partner cannot undertake such activities unless and until the United States gives its prior consent. These consent rights mandated by the NNPA are to be established in agreements for nuclear cooperation and thereafter confirmed in licensing proceedings and exercised in connection with the authorization of "subsequent arrangements" -- most importantly, those relating to reprocessing, use and retransfer of recovered plutonium.

The EURATOM agreement abandons the concept of reserved consent rights. Instead, its text clearly provides blanket authorization, good for the life of the agreement, for retransfers and for proliferation-sensitive activities within EURATOM that by law should each be subject to the prior consent of the United States. As a practical matter, the agreement delegates to the Europeans the power to determine whether any particular activity would or would not be consistent with basic U.S. non-proliferation standards.

In this repudiation of the NNPA, the EURATOM agreement is different on its face from every other U.S. nuclear agreement with a non-nuclear-weapon state negotiated or renegotiated since enactment of this law in 1978. Some of the agreements -- those with Sweden, Norway, Finland, and Japan -- were accompanied by long-term, advance "programmatic consents" to engage in sensitive activities. Even in those agreements -- including the one with Japan, in which the programmatic consent was the most sweeping -- the basic text of the agreement upheld U.S. consent rights, as required by the NNPA, and then advance consent was granted in the implementing arrangements for sensitive activities for the duration of the agreement.

Thus, the EURATOM agreement reflects an unparalleled capitulation to the negotiating demands of a U.S. trading partner. Press accounts of the negotiations present a disturbing picture of U.S. efforts. EURATOM negotiators reportedly labeled the U.S. a "junior partner"[2] and strongly objected to retention of U.S. consent rights as required by the NNPA. U.S. negotiators, eager to reach agreement, acceded to European demands that these rights be excluded from the agreement.

In defending the defective agreement, administration officials have been quoted as saying that the controls are "more implicit," and that the agreement satisfies the requirements of the law "when you roll it all into one."[3] However, the final result of the negotiations should be examined in the context of a statement by Secretary of State Warren Christopher in a 1994 letter to EURATOM: "Given that EURATOM has accepted consent rights in its agreements with other countries, we would find it impossible to explain to Congress their absence in a new agreement with the United States." This Committee

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[2] Kathleen Hart and Pearl Marshall, "Europeans Approve U.S.-Euratom Pact, To Lapse During Congressional Review," *NuclearFuel*, July 31, 1995, 5.

[3] Kathleen Hart, "NCI Calls U.S.-Euratom Pact Illegal; U.S. Industry Is Supportive," *NuclearFuel*, June 19, 1995, 12.

should ask the Administration to explain the absence of the required consent rights in light of the earlier position taken by Secretary of State Christopher.

Forced to defend this unenviable negotiating record, the Administration has claimed that the proposed EURATOM agreement does in fact comply with the requirements of the NNPA. Rather than engage in a point-by-point rebuttal of specious arguments made by the Administration in response to our detailed criticism of the agreement -- something I would be glad to do in response to specific questions -- I will address three broad arguments the Administration repeatedly makes.

First, the administration defends the proposed agreement by arguing that the controls the United States will have under its terms are greater than those it had under the terms of the old EURATOM agreement (the one which expired on December 31). But the question is not whether the proposed agreement is better than an old agreement which pre-dates the NNPA and which everyone agrees is defective. Rather, the question is whether the proposed agreement meets the current requirements of the NNPA.

It is true that, since the enactment of the NNPA, Congress had allowed an annual waiver of the NNPA's requirements for a more restrictive agreement to be negotiated with EURATOM, thus allowing EURATOM to continue receiving U.S. nuclear exports under the permissive terms of the old agreement. But that waiver was for the express purpose of allowing ample time for the U.S. to negotiate a new agreement with EURATOM that did comply with the requirements of the law. In enacting the NNPA, the Congress could not have been clearer in stating its intention that the President must renegotiate the U.S. agreement with EURATOM to remedy its legal deficiencies under the NNPA -- that is, to secure U.S. consent rights over reprocessing and retransfers.

Second, the Administration argues that the blanket authorization provided in the proposed EURATOM agreement is consistent with the consent-rights regime stipulated in the NNPA. "Authorization" and "consent," the administration asserts, are the same thing; therefore, the agreement is sound. But such an assertion violates the intent of the NNPA to give Congress continuing effective oversight over nuclear trade.

An agreement for cooperation establishes a framework under which nuclear trade may take place. Within that framework, foreign countries can seek consent for specific activities through "subsequent arrangements." Once approved by the Executive Branch, these subsequent arrangements must lie before Congress for 15 days of continuous session. Through this process, Congress is able to maintain continuing oversight over proliferation-sensitive activities. But the proposed agreement with EURATOM does away with that essential element of Congressional oversight. This is one of principal flaws of long-term programmatic consents.

Senator Glenn, you put it best in a 1982 statement opposing the concept of programmatic consent:

> One of the principal reforms Congress introduced in the [NNPA] was to bring this approval process, which had long been handled behind the scenes, into the public arena by requiring each subsequent arrangement to be justified publicly and to lay before Congress for fifteen days of continuous session. This congressional oversight would be crippled if the United States were to grant a long-term generic approval which might last for a period of decades ....

In that statement, Senator Glenn also focused on the importance of the NNPA's "timely warning" criterion. This criterion for determining whether the U.S. would have timely warning of a diversion of weapons-usable nuclear material was to be technically based, and would obviously be influenced by developments in the country in question over the course of an agreement. In addition, according to Senator Glenn,

> The NNPA also established a tough standard for reviewing subsequent arrangements based upon a determination that they would not cause a significant increase in the risk of proliferation beyond that which existed at the time the approval was requested.
>
> Given the practice at the time this provision was adopted, it is clear that Congress had in mind an examination of proliferation risk on a relatively frequent basis, with the issue to be evaluated each time a new subsequent arrangement request came forward. The ... [long-term consent] proposal, in contrast, would require the implausible finding that activities involving major quantities of weapons-usable plutonium were not going to increase proliferation risks for a period of up to 30 years. Such an inherently arbitrary determination is totally at odds with the kind of careful, ongoing scrutiny Congress intended for these transactions when it adopted the increased proliferation risk standard.

Finally, the Administration frequently makes reference to the suspension rights that the United States has under the agreement. But these rights are largely a legal fiction. Since the agreement does not contain consent rights, there are no individual consents to suspend. The agreement deprives the United States of the ability to make a facility-specific or activity-specific suspension but instead requires that any decision with respect to activities involving reprocessing/alteration in form or content "apply to the activities of the other party...taken as a whole." In other words, the agreement would require that the U.S. suspend <u>all</u> nuclear cooperation with respect to these particular activities with <u>all</u> members of EURATOM in order to respond to problems at a single facility -- a virtual political impossibility.

Specific Legal and Policy Defects of the Proposed Agreement

There are ample grounds for Congress to reject the proposed agreement in its present form. I want to call attention to a number of problems that deserve particular scrutiny and remedial action by Congress:

• **The agreement opens the door to trafficking of U.S.-origin atom-bomb materials in former East Bloc countries.** Although not required to do so by law, the United States has chosen to treat the group of nations that makes up EURATOM as a single country -- that is, U.S. nuclear material and other items can be transferred freely across national borders within EURATOM. This could become a serious problem if political or security conditions deteriorate in a current member state or when former East Bloc countries join EURATOM. Nine countries (Bulgaria, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, and Slovakia) have signed "Europe Agreements" with the European Union, making them eligible for formal consideration for admission into the EU and EURATOM. The risks posed by the abandonment of the NNPA-required controls over U.S.-origin material are particularly severe in the case of former East Bloc countries, where physical security, nuclear material accounting, and export controls are weakest and where reports of smuggling of nuclear materials from Russia and other former Communist countries are numerous.

• **Current EURATOM members are free to build and operate new plants for processing and using U.S.-origin nuclear materials without U.S. consent.** Despite the consent-rights requirement of the NNPA, the proposed agreement does not provide the U.S. with any means to prevent EURATOM facilities from being built and operated with U.S.-origin weapons-usable material if the U.S. has concerns about safeguards, security, or the actual need for the materials. In addition, the proposed agreement provides no opportunity for Congressional review of these additions.

• **The agreement does not contain the standard provision making its terms subject to the domestic laws and regulations of the parties.** As a consequence, EURATOM may be in a position to claim that the United States is in breach of the agreement if, at some future date, Congress enacts or agencies adopt nuclear controls more rigorous than the weak measures contained in the agreement. In 1985, in the context of the then-pending U.S.-China agreement, the State Department affirmed that the standard provision in U.S. agreements for cooperation, specifying that cooperation is subject to applicable requirements of domestic law, protected U.S. flexibility to enact laws further restricting exports for non-proliferation or national security reasons. In the absence of such a provision in the EURATOM Agreement, the United States should receive specific assurances from EURATOM that the Europeans would not consider U.S. imposition of more restrictive export controls in the future as a breach of the Agreement.

• **The agreement comes at a time when many EURATOM countries do not share U.S. non-proliferation goals.** President Clinton defends the agreement's permissive language by citing EURATOM's "impeccable nuclear nonproliferation credentials." But many of the EURATOM countries have had, and continue to have, a permissive approach to civilian commerce in atom-bomb materials -- plutonium and HEU -- in contrast to the

restrictive approach taken by the United States. EURATOM is now negotiating with Russia to acquire HEU for European research reactors -- a slap in the face of the United States, which for nearly two decades has been leading an international program to phase out commerce in bomb-grade uranium. This proposed sale also would undercut the $12-billion U.S. commitment to purchase Russian HEU -- a commitment intended to ensure that Russian highly enriched, bomb-grade uranium is sold in the international marketplace only in low-enriched, non-weapons-usable form.

European countries also have been lax in limiting their exports to states seeking to develop nuclear weapons. Iraq's nuclear-weapons program was built largely on high-tech European imports. North Korea's reprocessing plant was based in part on a European design. In recent years, European countries also have sent sophisticated technology to Iran and have resisted U.S. efforts to impose an embargo there. These are only a few examples of a long history of European nuclear exports to such countries as India and Pakistan that refuse to sign the Nuclear Non-Proliferation Treaty and actively pursue nuclear weapons development. I would like to submit for the record NCI's background paper, "EURATOM'S Nuclear Proliferation Record," which elaborates further on this subject.

EURATOM members also have a long history of strongly resisting making international safeguards more effective -- first by limiting the IAEA's right of access within nuclear facilities under the terms of the standard IAEA safeguards agreement with non-nuclear weapon states party to the NPT, then by provoking a long dispute with the IAEA over cooperative arrangements for joint IAEA-EURATOM inspections in Europe, and, most recently, by obstructing approval of the IAEA's proposed "93 + 2" safeguards regime aimed at improving the effectiveness of the agency in detecting undeclared nuclear activities in the wake of revelations in Iraq and North Korea.

• **The agreement fails to include the required controls on U.S. transfers of technology important to production of separated plutonium, highly enriched uranium or heavy water (so-called "sensitive nuclear technology," or "SNT").** The structure of the NNPA leaves no doubt that SNT must be treated in the same fashion as nuclear reactors and fuel -- that is, it can be transferred only pursuant to a nuclear cooperation agreement. The proposed EURATOM agreement is silent with respect to SNT transfers and does not contain the guaranty required by Section 123a.(9) of the NNPA. However, the Administration asserts that SNT can be transferred outside the agreement. It is particularly important for Congress to close this dangerous loophole, given ample evidence of past abuse in this area.

When the State Department testified before Congress in 1987 in support of the then-pending U.S.-Japan nuclear agreement, it misled Congress into believing that, in the absence of a provision in the agreement authorizing transfers of SNT, no SNT --- in particular, no reprocessing plants would be transferred to Japan. But in a 1994 report, Greenpeace International revealed that the Reagan, Bush, and Clinton administrations have nonetheless transferred to Japan sophisticated technology for a reprocessing plant that will produce "weapons-grade" plutonium.

• **The agreement may fail to ensure that U.S.-origin civilian plutonium is not used in France's nuclear-weapon program.** It has been reported that in the past, U.S.-origin, fissile material from Japan has been processed with French military material in the UP-2 reprocessing plant at La Hague. These reports raise important concerns about the exclusively "peaceful-use" requirement for U.S. nuclear exports and about the ability of International Atomic Energy Agency (IAEA) and EURATOM safeguards to verify that U.S.-origin civilian materials are kept separate from weapons materials in EURATOM. While concerns about this potential violation of peaceful-use commitments for the future are reduced somewhat by President Chirac's recent announcement that France would end production of plutonium and HEU for weapons, it should be remembered that France's policy on military materials production could change, just as its policy against nuclear testing changed when President Chirac succeeded President Mitterrand.

• **The agreement establishes a bad precedent for other nuclear agreements.** The new low in proliferation controls represented by the proposed EURATOM agreement is particularly troubling with regard to Japan, the nation with the world's most ambitious plutonium program. A Side Letter to the 1987 U.S.-Japan agreement says that in the case of an agreement that provides "significantly greater practical advantages" than the Japan agreement, the United States "will make its best efforts to provide to the Government of Japan similar treatment, including, as may be necessary, through amendment of these agreements." Therefore, Japan apparently is being handed a golden opportunity to renegotiate its nuclear agreement with the United States down to the same permissive levels as in the U.S.-EURATOM agreement.

Recommendations for Congressional Action

To address the problems in the agreement raised above, and thereby protect vital U.S. security interests, we and the other five organizations noted above urge Congress to reject the agreement in its present form and to enact, as part of a resolution of approval, the following conditions that must be met before the agreement can come into force.

1. For a future EURATOM country (that is, one which joins EURATOM after the agreement is approved), any facility for the storage, separation or use of U.S.-origin plutonium or highly enriched uranium can be added to the agreement's list of approved facilities only in accordance with the procedures for a subsequent arrangement including public and Congressional review, as stipulated in Section 131 of the Atomic Energy Act.

2. For a country currently a member of EURATOM, any such facility can be added to the list of approved facilities only after the U.S. government has decided to acknowledge notification of EURATOM's intention to add such a facility to the list. Congress must be informed immediately by the Executive Branch of a notice of intent by EURATOM to add a facility to the list.

3. Each proposed export and/or approval pursuant to the agreement shall be subject to the laws and regulations of the United States in effect at the time of the export or approval.

4. EURATOM shall give the U.S. binding assurances that it will not take any steps to acquire highly enriched uranium from Russia for research reactors.

5. The United States shall not transfer to EURATOM any technology for production of separated plutonium, enriched uranium, or heavy water (whether or not the technology is designated "SNT").

6. U.S.-origin nuclear material shall not be processed, stored, or utilized in any facility within EURATOM while military material is being processed, stored or utilized.

7. The EURATOM agreement shall not serve as a precedent for any country to renegotiate its nuclear-cooperation agreement with the United States.

Conclusion

Mr. Chairman, you are hearing from the Administration and the nuclear industry that the proposed agreement cannot be altered one iota, that the negotiations were so arduous and their result so delicate that even the slightest change at this point would cause a cataclysm in U.S.-European relations. They are asking you to rubber-stamp a bad agreement and to allow it to come into force in the interest of avoiding political frictions with close allies.

But, I submit, to follow such a course is to ratchet down vital U.S. security interests in the interest of political expediency. This is not how the NNPA is supposed to work; this is not how Congress is supposed to fulfill its satutory responsibility. As noted, a principal reason for the statute was to provide Congress with an enhanced role in overseeing U.S. nuclear commerce because of the manifest failures of the Executive Branch to put security ahead of politics in this arena. I urge you and your colleagues to fulfill this responsibility by conditioning approval of the proposed U.S.-EURATOM agreement upon repair of its principal defects. Failure to do so could set the stage, on your watch, for future acts of nuclear proliferation and nuclear terrorism that could bring great grief and tragedy to the nation and to the world with U.S.-origin nuclear materials covered by this agreement but not subject to the strict controls required by U.S. law.

Thank you for your attention.

NUCLEAR CONTROL INSTITUTE • BUSINESS EXECUTIVES FOR NATIONAL SECURITY • CENTER FOR SECURITY POLICY • GREENPEACE INTERNATIONAL • MIDDLE EAST DATA PROJECT • NATURAL RESOURCES DEFENSE COUNCIL

February 23, 1996

The Honorable Robert J. Dole
Majority Leader of the Senate
The Capitol
Washington, D.C.

The Honorable Thomas A. Daschle
Minority Leader of the Senate
The Capitol
Washington, D.C.

Dear Mr. Majority Leader and Mr. Minority Leader:

We represent a broad spectrum of organizations concerned with preventing the further spread of nuclear weapons. We are writing to express our deep concerns about the proposed agreement for civilian nuclear cooperation between the United States and the European Atomic Energy Community (EURATOM). We have analyzed the agreement and find that it fails to meet the requirements of U.S. law and is contrary to sound non-proliferation policy.[1] We, therefore, urge that this agreement in its current form be rejected by the Congress. At a minimum, to mitigate damage to vital U.S. interests, we by urge enactment of a series of conditions that must be met before the agreement is allowed to come into force.

On November 29, President Clinton submitted the proposed U.S.-EURATOM agreement to Congress. Under U.S. law -- the Nuclear Non-Proliferation Act of 1978 (NNPA) -- such agreements must include specified controls over activities involving U.S. nuclear materials, equipment, and technology to ensure that these exports do not contribute to the development of nuclear weapons by additional states or terrorist groups.

But EURATOM negotiators reportedly labeled the U.S. a "junior partner"[2] and strongly objected to these statutory controls. The controls take the form of U.S. "consent rights" over foreign use of U.S.-origin nuclear materials and other items suitable for direct use in the manufacture of nuclear weapons. In EURATOM, fully three-quarters of all the plutonium now being separated and all of the highly enriched uranium now being used are derived from U.S.-supplied nuclear fuel. U.S. negotiators, eager to reach agreement, acceded to European demands that U.S. controls over these weapons-usable materials be

[1] Eldon Greenberg, "Legal Deficiencies in the Proposed Agreement for Nuclear Cooperation Between the United States and EURATOM," Nuclear Control Institute, January 29, 1996.

[2] Kathleen Hart and Pearl Marshall, "Europeans Approve U.S.-Euratom Pact, To Lapse During Congressional Review," *NuclearFuel*, July 31, 1995, 5.

excluded from the agreement. Administration officials have been quoted as defending the defective agreement by saying that the controls are "more implicit," and that the agreement satisfies the requirements of the law "when you roll it all into one."[3]

However, a detailed legal analysis prepared for the Nuclear Control Institute finds that "as a practical matter, the Agreement delegates to the Europeans the power to determine whether any particular [nuclear] activity would or would not be consistent with basic U.S. non-proliferation standards." In short, the analysis says, "the EURATOM Agreement reflects an unparalleled capitulation to the negotiating demands of a U.S. trading partner, and is deeply disturbing as a matter of non-proliferation policy."

There are several grave problems upon which we believe Congress should focus its attention and take remedial action during the brief time remaining for Congressional consideration:

• **The agreement opens the door to trafficking of U.S.-origin atom-bomb materials in former East Bloc countries.** Although not mandated by law, the United States has chosen to treat the group of nations that makes up EURATOM as a single country -- that is, U.S. nuclear material and other items can be transferred freely across national borders within EURATOM. This could become a serious problem if political or security conditions deteriorate in a current member state or when former East Bloc countries join EURATOM. Nine countries (Bulgaria, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, and Slovakia) have signed "Europe agreements" with the European Union, making them eligible for formal consideration for admission into the EU and EURATOM. The risks posed by the abandonment of the NNPA-required controls over U.S.-origin material are particularly severe in the case of former East Bloc countries, where physical security, nuclear material accounting, and export controls are weakest and where reports of smuggling of nuclear materials from the former Soviet Union are numerous.

• **Current EURATOM members are free to build and operate new plants for processing and using U.S.-origin nuclear materials without U.S. consent.** Despite the consent-rights requirement of the NNPA, the proposed agreement does not provide the U.S. with any means to prevent Euratom facilities from being built and operated with U.S.-origin weapons-usable material if the U.S. has concerns about safeguards, security, or the need for the materials.

• **The agreement does not contain the standard provision making its terms subject to the domestic laws and regulations of the parties.** EURATOM, therefore, may be in a position to claim that the United States is in breach of the agreement if, at some future date, Congress enacts nuclear controls more rigorous than the weak measures contained in the agreement.

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[3] Kathleen Hart, "NCI Calls U.S.-Euratom Pact Illegal; U.S. Industry Is Supportive," *NuclearFuel*, June 19, 1995, 12.

• **The agreement comes at a time when many EURATOM countries do not share U.S. non-proliferation goals.** President Clinton defends the agreement's permissive language by citing EURATOM's "impeccable nuclear nonproliferation credentials." But many of the EURATOM countries have had, and continue to have, a permissive approach to civilian commerce in atom-bomb materials -- plutonium and highly enriched uranium (HEU) -- in contrast to the restrictive approach taken by the United States. EURATOM is now negotiating with Russia to acquire HEU for European research reactors -- a slap in the face of the United States, which for nearly two decades has been leading an international program to phase out commerce in bomb-grade uranium. This proposed sale also would undercut the $12-billion U.S. commitment to purchase Russian HEU -- a commitment intended to ensure that Russian highly enriched, bomb-grade uranium is sold in the international marketplace only in low-enriched, non-weapons-usable form.

European countries also have been lax in limiting their exports to states seeking to develop nuclear weapons. Iraq's nuclear-weapons program was built largely on high-tech European imports. North Korea's reprocessing plant was based in part on a European design. In recent years, European countries also have sent sophisticated technology to Iran and have resisted U.S. efforts to impose an embargo there. These are only a few examples of a long history of European nuclear exports to such countries as India and Pakistan that refuse to sign the Nuclear Non-Proliferation Treaty and actively pursue nuclear weapons development.

• **The agreement's weak controls invite dangerous exports and set bad precedents.** Among the legal defects of the agreement are its failure to include the required controls on U.S. transfers of technology important to production of separated plutonium, highly enriched uranium or heavy water (so-called "sensitive nuclear technology," or "SNT"). We are also concerned that the agreement may fail to ensure that U.S.-origin civilian plutonium is not used in France's nuclear-weapon program. Finally, the agreement establishes a precedent that provides Japan, the nation with the world's most ambitious plutonium program, the opportunity to renegotiate its nuclear agreement with the United States down to the same permissive levels as the U.S.-EURATOM agreement.

To address the problems raised above and protect vital U.S. security interests, we urge you to enact, as part of a resolution of approval, the following conditions that must be met before the agreement can come into force.

1. For a future EURATOM country (that is, one which joins EURATOM after the agreement is approved), any facility for the storage, separation or use of U.S.-origin plutonium or highly enriched uranium can be added to the agreement's list of approved facilities only in accordance with the procedures for a "subsequent arrangement," including public and Congressional review, as stipulated in Section 131 of the Atomic Energy Act.

2. For a country currently a member of EURATOM, any such facility can be added to the list of approved facilities only after the U.S. government has decided to acknowledge notification of EURATOM's intention to add such a facility to the list. Congress must be informed immediately by the Executive Branch of a notice of intent by EURATOM to add a facility to the list.

3. Each proposed export and/or approval pursuant to the agreement shall be subject to the laws and regulations of the United States in effect at the time of the export or approval.

4. EURATOM shall give the U.S. binding assurances that it will not take any steps to acquire highly enriched uranium from Russia for research reactors.

5. The United States shall not transfer to EURATOM any technology for production of separated plutonium, enriched uranium, or heavy water (whether or not the technology is designated "SNT").

6. U.S.-origin nuclear material shall not be processed, stored, or utilized in any facility within EURATOM while military material is being processed, stored or utilized.

7. The EURATOM agreement shall not serve as a precedent for any country to renegotiate its nuclear-cooperation agreement with the United States.

We are united in our deep concern that without these remedies, the EURATOM agreement will pose a real threat to U.S. national security over its minimum term of 30 years. The agreement, therefore, should not be allowed to enter into force in its current form. We will be pleased to work with you to achieve the essential improvements that we have proposed.

Thank you for your attention to this urgent matter.

Sincerely,

Paul Leventhal, Nuclear Control Institute
Stanley A. Weiss, Business Executives for National Security
Frank Gaffney, Center for Security Policy
Tom Clements, Greenpeace International
Kenneth R. Timmerman, Middle East Data Project
Christopher Paine, Natural Resources Defense Council

cc: The Honorable Jesse A. Helms, Chairman, Foreign Relations Committee
The Honorable Claiborne Pell, Ranking Minority Member, Foreign Relations Committee
The Honorable Ted Stevens, Chairman, Governmental Affairs Committee
The Honorable John Glenn. Ranking Minority Member, Governmental Affairs Committee

Implications of the Euratom Treaty for Proliferation in the Middle East

by Kenneth R. Timmerman
Director, Middle East Data Project, Inc.

Feb. 23, 1996

My name is Kenneth Timmerman, and I publish a monthly investigative newsletter called The Iran Brief. I have written extensively on proliferation issues in Time Magazine, the Wall Street Journal and elsewhere, and have published a book on Iraq's weapons industries called *The Death Lobby: How the West Armed Iraq*. After 18 years in Europe and the Middle East, I was called to Washington in 1993 to work on proliferation and arms control issues in the 103rd Congress. I left the Congress at the end of 1993 fearing that the Clinton adminsitration had gone wrong - deadly wrong - on proliferation issues. And this agreement is just one more example which has reinforced those fears.

This agreement is just one more example which shows how the Clinton adminstration has unilaterally abandoned U.S. leverage in international negotiations under trade pressure from Europe and from U.S. exporters.

In transmitting the Euratom accord to Congress, President Clinton cited Europe's "impeccable nuclear nonproliferation credentials" as justifying this unprecedented abdication of U.S. control over such U.S. origin nuclear materials and technologies. But recent history is full of examples which fly in the face of such optimism.

In the 1970s and early 1980s, France was the greatest purveyor of nuclear technologies to the Third World since the U.S. Atoms for Peace program in the 1950s. Unlike Atoms for Peace, however, France sold plutonium production and reprocessing technologies to Iraq and Pakistan which directly supported the nuclear weapons programs of those two countries.

While it is clear to me that France has firmly rejected its earlier philosophical stand that nuclear weapons contributed to Third World stability and independence, this could change.

President Jacques Chirac is a strong believer in the Atlantic Alliance who has done more than any other French politician before him to reintegrate France into NATO, and thus into closer cooperation with the United States. But Mr. Chirac also has strong ties to the pro-Iraq lobby in France. And several of his closest allies (including Transportation Minister Bernard Pons) favor expanding trade and security ties with Iran. While Mr. Chirac has given the U.S. quiet assurances that he would not transfer "dangerous" technologies to either Iraq or Iran, under the Euratom agreement we will have to take him on faith. A future French president may not turn out to be as responsible.

As for Germany, it is a special case unto itself.

Not even an apologist for the German government could credibly claim that German has "impeccable nonproliferation standardsm," as President Clinton has done. A more appropriate analogy for the behavior of the German government in nonproliferation matters would be the three monkeys of the fairy tale: See no Evil, Hear no Evil, Speak no Evil.

In Iraq, there is virtually not a single weapons program - conventional, or unconventional - that does not bear a "Made in Germany" stamp. German rocket

scientists helped Iraq redesign its SCUD-B missiles so they could hit Saudi Arabia and Israel. German nuclear scientists helped Iraq solve its problems with uranium enrichment centrifuges. German chemists and industrialists helped Iraq build its enormous chemical weapons capabilities.

In Iran today German companies are playing a similar role as they did in Iraq of the 1980s.

Iran's largest chemical weapons plants have been built with German assistance. German companies have supplied huge quantities of high precision machine-tools and other equipment to Iranian ballistic missile plants. In 1993, the Swiss subsidiary of one of Germany's largest and best known chemical manufacturers - Bayer - sold biological fermenters to Iran which are used to produce vaccines but which make biological warfare agents without any modification.

Just last year, according to the German government's own statistics, Germany's export control department approved fully 80% of all the licensing requests to ship dual-use equipment to Iran. Since the mid-1980s, Germany has shipped an estimated $15-20 billion worth of sophisticated machinery and electronics to Iran, much of which has wound up in weapons plants or dual civilian and military facilities.

These are but two examples. The historic behavior of other European countries, while less extravagent, also counsels reticence.

For instance, the Czech Republic and Slovakia maintain extensive ties with Iran, as does Poland; Greece, which is a full member of Euratom, has consistently shown itself to be the weak link in the European Union export control chain. (As have Spain and Portugal, albeit to a lesser degree). Any international security agreement which affords to Greece the same priviledges it does to a Great Britain, Italy, France, or Germany, is a flawed agreement - unless of course we are dealing with the security of wine or olive oil exports.

Europe and the United States have a long history of differing on important security issues. We have different perceptions, different policies, and even strongly different interpretations of the facts. Nowhere are these differences more pronounced that in the Middle East, where the European desire for trade with rogue states clashes with U.S. national security interests.

Secretary of State Warren Christopher has repeatedly warned over the past year that Iran is engaged in a "crash effort" to develop nuclear weapons, warnings which have fleshed out by the CIA at Congressional hearings. Despite all the evidence, much of which is a matter of public record, European nations such as Germany, France, Austria, and Italy steadfastly refuse to acknowledge that Iran is even conducting research aimed at developing nuclear weapons. What assurances do we have that under the new treaty the Europeans will not sell nuclear materials to Iran, because they see such sales to be in their commercial interest?

When Ronald Reagan first began negotiations with Mikhail Gorbachev over strategic arms limitations, he cited a Russian proverb as his guide: *Doverai no proverai* - trust but verify. We should hold our European friends and allies to no less a standard of proof. Congress should seek to amend the Euratom accord to ensure that the requirements of existing U.S. nonproliferation laws are met. The U.S. must retain control over the retransfer of U.S. nuclear materials and technology. Without such an amendments, we will only be helping potential adversaries in their quest for a nuclear sword.

Coalition slams U.S. nuclear pact with Europe

RTw 2/23/96 3:28 PM

By Carol Giacomo

WASHINGTON, Feb 23 (Reuter) - A broad coalition of groups blasted a new U.S. nuclear agreement with Europe on Friday, claiming it undermines American nonproliferation goals by weakening controls to avoid friction with the allies.

The agreement, which President Bill Clinton submitted to Congress last November, would govern civilian nuclear cooperation between the United States and the European Atomic Energy Community, or Euratom, for the next 35 years.

But the coalition, which spans an unlikely spectrum that includes Greenpeace, the Nuclear Control Institute, the conservative Centre for National Security Policy and Business Executives for National Security, is urging that the pact be rejected, or heavily amended, by Congress.

The attack comes as a particular blow for Clinton -- now in the midst of a re-election campaign -- who has often said that stemming the spread of nuclear and other weapons of mass destruction is a foreign policy priority.

"We have given the Europeans a carte blanche in this agreement to carry out what programmes they wish," Attorney Eldon Greenberg of the Nuclear Control Institute told a news conference.

Paul Leventhal, also of the institute, said, "Our view is that the adminstration bent to the Europeans' will to avoid political friction" with the allies.

The critics claim the accord, by weakening U.S. controls over foreign use of U.S.-origin nuclear materials, reflects an "unparalleled capitulation to the negotiating demands of a U.S. trading partner."

In Euratom, some three-quarters of all the plutonium now being separated and all the highly-enriched uranium now being used are derived from U.S.-supplied nuclear fuel.

The coalition argued that the agreement -- which treats all of Europe as one entity -- opens the door to trafficking in bomb-related materials, particularly if former East bloc countries, where export controls are weakest, join Euratom.

It also asserted that current Euratom members would now be free to build and operate new plants for reprocessing and use U.S-originated nuclear materials without U.S. consent, even if Washington had concerns about safeguards or security.

Chris Paine of the Natural Resources Defence Council said it is "not a rational security judgment" for Washington to give away its unilateral rights to control U.S.-originated nuclear materials at a time of increased threat.

He cited the increased technical sophistication of subnational groups manifest in the World Trade Centre bombing, increased stockpiles of plutonium around the world and leakage of plutonium and highly-enriched uranium from Russia.

The U.S. Arms Control and Disarmanent Agency, which has major responsibility for advocating arms control within the adminstration, participated in negotiating the agreement and its director, John Holum, urged Clinton to approve it.

In a memo to the president dated last September and obtained by Reuters, Holum argued the pact "meets all statuatory requirements ... and includes the best possible safeguards and controls."

(more)

He acknowledged that the pact grants long-term consent for certain operations, like reprocessing spent fuel, but insists the United States could suspend this consent if warranted.

Holum said Washington fended off other strong demands by European allies and stressed that the "long-term stability" of the allies's political systems offered strong assurances that they would use the U.S.-origin materials peacefully.

But Ken Timmerman of the Middle East Data Project countered that such confidence is misplaced. He noted that France and Germany both had big roles in developing Iraq's nuclear and weapons capability and that the United States and Europe are divided on other issues, including restraining trade with Iran.

REUTER

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FOR RELEASE AFTER 9 AM
Friday, February 23, 1996

Contact: Daniel Horner
Nuclear Control Institute
202 822-8444

NEW NUCLEAR PACT WITH EUROPE POSES GRAVE RISKS, A BROAD RANGE OF GROUPS WARNS CONGRESS

WASHINGTON -- A broad spectrum of national-security and non-proliferation organizations today called on Congress to reject a proposed U.S.-European nuclear agreement in its current form. The groups warned that the agreement violates U.S. law, opens the door to trafficking of atom-bomb materials in former East Bloc countries, and raises risks of nuclear terrorism and the spread of nuclear weapons.

At a press conference, the organizations also questioned why the U.S. is entering into a new nuclear agreement with Europe at the same time the U.S. is in strong disagreement with European plans to buy bomb-grade uranium from Russia in defiance of a U.S. embargo on this fuel.

In a letter to Congressional leaders released today, the groups called on Congress to reject the agreement, or, at a minimum, to enact a set of firm conditions to limit damage to vital U.S. security interests before allowing the agreement with EURATOM, the European Atomic Energy Community, to take effect.

"We are united in our deep concern," the organizations wrote, "that the EURATOM agreement will pose a real threat to U.S. national security over its minimum term of 30 years. The agreement, therefore, should not be allowed to enter into force in its current form."

Signing the letter were the Nuclear Control Institute, Business Executives for National Security, Center for Security Policy, Greenpeace International, Middle East Data Project, and Natural Resources Defense Council.

In their letter, the groups pointed out that under U.S. atomic energy law, U.S. agreements for civilian nuclear cooperation with other countries must be subject to specified controls to ensure that U.S. nuclear exports do not contribute to the development of nuclear weapons by additional states or terrorist groups. These controls take the form of U.S. "consent rights" over foreign use of U.S.-origin materials and other items suitable for direct use in nuclear weapons. The letter points out that in EURATOM "fully three-quarters of all the plutonium now being separated and all of the highly enriched uranium now being used are derived from U.S.-supplied nuclear fuel."

But EURATOM negotiators labeled the U.S. a "junior partner" and strongly objected to these controls. "U.S. negotiators, eager to reach agreement, acceded to European

demands that these controls be excluded from the agreement," the organizations said in their letter.

The groups cited a detailed legal analysis---prepared by Eldon Greenberg, counsel to the Nuclear Control Institute---which concludes that "as a practical matter, the Agreement delegates to the Europeans the power to determine whether any particular [nuclear] activity would or would not be consistent with basic U.S. non-proliferation standards," and "reflects an unparalleled capitulation to the negotiating demands of a U.S. trading partner, and is deeply disturbing as a matter of non-proliferation policy." The organizations itemized "several grave problems" associated with the agreement and demanded Congress reject the agreement or mitigate the problems by attaching to a resolution of approval a series of conditions that must be met before the agreement is allowed to come into force.

The groups noted that U.S. nuclear materials are free to be transferred across national borders in Europe because the State Department chooses to deal with EURATOM as if it were a single country rather than negotiate agreements with individual EURATOM countries. "This could become a serious problem if political and security conditions deteriorate in an existing member state or when former East Bloc countries join EURATOM," the organizations said, citing in particular weak nuclear controls and numerous reports of nuclear smuggling in the former East Bloc. The groups asked Congress to impose conditions requiring U.S. consent before any new plants in current or future EURATOM member states could be added to a list of facilities approved for receiving U.S.-origin, weapons-usable material or technology.

The organizations also challenged President Clinton's citing of EURATOM's "impeccable nuclear nonproliferation credentials" in transmitting the proposed agreement to Congress. The groups cited in particular EURATOM's "permissive approach to civilian commerce in atom-bomb materials" in contrast to the restrictive U.S. approach; EURATOM's ongoing attempt to buy bomb-grade uranium from Russia for research reactors in defiance of U.S. efforts to end civilian use of this fuel and to ensure that Russian highly enriched uranium is sold in the international marketplace only in low-enriched, non-weapons-usable form; and a "long history of European nuclear exports to such countries as India and Pakistan that refuse to sign the Nuclear Non-Proliferation Treaty and actively pursue nuclear weapons development." The groups asked Congress for a condition requiring EURATOM to scrub its bomb-grade uranium deal with Russia before the nuclear agreement with the U.S. can take effect.

The organizations also asked Congress to enact a condition that would make the EURATOM agreement subject to future U.S. laws and regulations. Further proposed conditions aimed at plugging loopholes in the agreement would bar U.S. transfers to EURATOM of any technology for producing separated plutonium, enriched uranium or heavy water; bar mixing of U.S.-origin civilian nuclear materials with European nuclear weapons materials; and bar the EURATOM agreement from establishing a precedent for any country to renegotiate its nuclear-cooperation agreement with the U.S.

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Nonproliferation Groups Urge Congress To Reject Euratom Pact

BY GEORGE LOBSENZ

Six nuclear nonproliferation groups called on Congress Friday to reject—or attach conditions to—a proposed U.S.-European nuclear cooperation pact that they charge would violate U.S. law and potentially worsen nuclear-smuggling in East European countries.

In a letter to congressional leaders, the groups said the Euratom agreement submitted to Congress by the Clinton administration Nov. 29 illegally and unwisely drops U.S. consent rights over European use and retransfer of U.S.-origin nuclear materials. They said that while the Nuclear Nonproliferation Act of 1978 requires explicit U.S. consent for foreign use of U.S.-origin materials, the

(Continued on page 2)

Groups Urge Congress To Reject Pact...

(From page one)

new pact effectively gives the European Atomic Energy Community (Euratom) the power to determine whether their nuclear activities meet U.S. nonproliferation policy.

The groups took strong issue with administration arguments that Euratom nations share U.S. nonproliferation goals and security standards and thus could be trusted to safeguard weapons-usable plutonium and high enriched uranium (HEU).

In particular, they pointed to current Euratom efforts to buy HEU from Russia to fuel European research reactors—a move that runs directly counter to a longstanding U.S. program to convert foreign research reactors to low-enriched uranium (LEU). They also said such a deal would undermine a U.S. commitment to buy $12 billion in Russian HEU for downblending to LEU. More broadly, they cited a history of European sales of sensitive nuclear technology to countries such as Iraq, Iran, India and Pakistan.

And the groups expressed special concern that the Euratom treaty, if approved without revision by Congress, could "open the door" for trafficking in U.S.-origin atomic material in former East Bloc nations now in line to join the European Union.

"Nine countries (Bulgaria, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania and Slovakia) have signed 'Europe agreements' with the European Union, making them eligible for formal consideration for admission into the EU and Euratom," the groups said in their letter.

"The risks posed by the abandonment of the Nuclear Nonproliferation Act-required controls over U.S.-origin material are particularly severe in the case of former East Bloc countries, where physical security, nuclear material accounting, and export controls are weakest, and where reports of smuggling of nuclear materials from the former Soviet Union are numerous."

Signing the letter were the Nuclear Control Institute, Business Executives for National Security, Greenpeace International, Middle East Data Project, Natural Resources Defense Council and the Center for Security Policy, a think tank headed by Frank Gaffney, a Pentagon official in the Reagan administration.

Officials with the Heritage Foundation, while not signing the letter, also voiced objections to the Euratom pact. Baker Spring, a senior policy analyst at the right-leaning foundation, said the prospect of former Soviet bloc nations gaining access to U.S.-origin nuclear materials—without any U.S. say over use of those materials—should alarm U.S. policymakers.

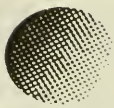
"It's one thing to say Germany has earned our trust [in handling nuclear materials]; it's another thing to say Bulgaria has," Spring told *The Energy Daily*.

The controversy over the Euratom pact has prompted the Senate Governmental Affairs Committee to schedule a Feb. 28 hearing. No House hearings have been set, but three Democratic lawmakers have asked the House International Relations Committee to do so. In addition, Rep. Benjamin Gilman (R-N.Y.), chairman of that committee, has written to Secretary of State Warren Christopher expressing concern about the Euratom effort to buy Russian HEU.

Congress has 60 days to approve or disapprove the pact. If lawmakers do not act, the agreement automatically takes effect.

The nonproliferation groups said that if Congress did not reject the agreement, it ought to attach these conditions to any resolution of approval:

- Euratom must provide "binding assurances" that it will drop its efforts to buy Russian HEU.
- The U.S. shall not transfer to Euratom any technology for production of separated plutonium, HEU or heavy water.
- Each proposed nuclear export taken under the agreement shall be subject to applicable U.S. nonproliferation laws and regulations.
- Congress must be notified whenever a current or future Euratom nation adds a new facility covered under the agreement.
- The Euratom agreement shall not serve as a precedent for any nation to renegotiate its nuclear cooperation pact with the U.S.



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LEGAL DEFICIENCIES IN THE PROPOSED AGREEMENT FOR NUCLEAR COOPERATION BETWEEN THE UNITED STATES AND EURATOM

On November 29, 1995, the Administration submitted to the Congress, pursuant to Sections 123b. and d. of the Atomic Energy Act of 1954, 42 U.S.C. § 2153(b),(d) (the "Act"), as amended by the Nuclear Non-Proliferation Act of 1978, Pub. L. No. 95-242, 92 Stat. 120 (March 10, 1978) (the "NNPA"), a proposed agreement for cooperation in the peaceful uses of nuclear energy between the European Atomic Energy Community ("EURATOM") and the United States (the "EURATOM Agreement"). See H. Doc. No. 138, 104th Cong., 1st Sess. (November 29, 1995):

The submission of the EURATOM Agreement followed a determination that the Agreement met all statutory requirements. See Memorandum, dated September 22, 1995, from Secretary of State Christopher and Secretary of Energy O'Leary to President William J. Clinton, H. Doc. No. 138 at 137. Under the procedures of Section 123, the Congress now has a total of ninety legislative days to review the Agreement and decide whether it favors or does not favor the Agreement. If the Congress takes no action, the Agreement will automatically go into effect at the end of the review period. Should the Congress not favor the Agreement, it may adopt a joint resolution of disapproval which, unless vetoed by the President, will prevent the Agreement from coming into force.

The NNPA establishes a finely-tuned system of U.S. "consent rights" over activities involving U.S.-origin facilities, equipment and materials. These consent rights, to be embodied in the first instance in agreements for nuclear cooperation and thereafter confirmed in individual export licensing proceedings and exercised in connection with the authorization of "subsequent arrangements", are fundamental to achievement of U.S. non-proliferation objectives. Yet, contrary to the Administration's determination, the proposed EURATOM Agreement effectively ignores this consent rights regime and cedes unprecedented control over

activities involving U.S.-origin facilities, equipment and materials to the Europeans themselves. Indeed, it essentially authorizes a wide range of activities (including reprocessing of nuclear fuel and subsequent storage and use of recovered plutonium), required by law to be subject to the exercise of consent rights, over the entire term of the Agreement.

In the circumstances just described, the proper course for the Congress is to reject the Agreement. At the least, the Congress should insist, following consultation with the Executive Branch pursuant to Section 123b., that the Agreement be renegotiated or resubmitted with a waiver of statutory requirements. In that case, in accordance with the provisions of Section 123d. of the Act, the Agreement would not come into force unless the Congress adopted a joint resolution affirmatively approving it.

Overview -- The NNPA, Consent Rights and the EURATOM Agreement

(1) The Structure of the NNPA Consent Rights Regime

In adopting the NNPA in 1978, the Congress intended to establish clear and unequivocal controls over a range of activities in recipient countries involving U.S.-origin nuclear facilities, equipment and fuel. These controls were to be reflected in the first instance in a series of nine specific guarantees in agreements for cooperation entered into under Section 123 of the Act. The controls were meant to apply equally to all our trading partners in order to assure comprehensive and effective protections governing commerce in sensitive items, especially U.S.-origin, weapons-usable fissile material.

The NNPA controls were to be confirmed in connection with individual export licensing decisions for facilities and fuel. See Act, Section 127, 42 U.S.C. § 2156. Thereafter, the controls, in the form of "consent rights", were to be applied in connection with the approval of individual "subsequent arrangements", most importantly those relating to reprocessing and retransfer of recovered plutonium, under Section 131 of the Act, 42 U.S.C. § 2160.

In short, over the term of cooperation with foreign trading partners, effective, consistent and continuing oversight and control were to be maintained by the United States. The House Report on the NNPA, in particular, underscored that "variable controls" which had existed in the past were unacceptable and needed to be replaced, among other things, by a "clear and simple" consent rights regime, which would secure for the United States a continuing veto power over the use of its facilities, equipment and materials and ensure the application of

"consistent" standards -- standards which would "be unqualified and set forth in the agreement unambiguously." H.R. Rep. No. 587, 95th Cong., 1st Sess. 4, 7, 13-14 (1977).

The elaborate, iterative process established by the NNPA for the implementation of U.S. nuclear cooperation with its trading partners is deliberate and is fundamental to the achievement of U.S. non-proliferation goals. The language of the Act and its legislative history clearly contemplate that several actions subsequent to the entry into an agreement for cooperation -- including initial transfer of facilities, material and equipment from the United States and then an indication by the receiving country of an intent that reprocessing, for example, is desired -- must take place before consent and approval rights guaranteed in an agreement are called into play. This iterative process was designed to allow the United States to have a free hand to pursue its non-proliferation objectives as and if circumstances and/or understandings change.

Contrary to the assertions of the Administration, see Arms Control and Disarmament Agency, Nuclear Proliferation Assessment Statement II-20 (September 8, 1995) (the "NPAS"), H. Doc. No. 138 at 113, the review of an agreement by the President and the Congress at the time of entry into force, no matter how thorough, cannot substitute for later reviews by both the Executive Branch and the Congress under statutory procedures for subsequent arrangements. Upfront, open-ended authorizations for fuel cycle activities, in other words, are fundamentally incompatible with the NNPA. As Senator Glenn, one of the principal sponsors of NNPA, stated over a decade ago when the concept of advance, long-term consent was first unveiled by the Reagan Administration:

> I believe ...the ... proposal for one-shot, long-term programmatic approvals is contrary to the Non-Proliferation Act. Without going into all the details here, the text and legislative history of that act make clear that Congress was fully aware of the longstanding practice of reviewing subsequent arrangements on a case-by-case basis.
>
> One of the principal reforms Congress introduced in the act was to bring this approval process, which had long been handled behind the scenes, into the public arena by requiring each subsequent arrangement to be justified publicly and to lay before Congress for fifteen days of continuous session. This congressional oversight would be crippled if the United States were to grant a long-term generic approval which might last for a period of decades ....

> The NNPA also established a tough standard for reviewing subsequent arrangements based upon a determination that they would not cause a significant increase in the risk of proliferation beyond that which existed at the time the approval was requested.
>
> Given the practice at the time this provision was adopted, it is clear that Congress had in mind an examination of proliferation risk on a relatively frequent basis, with the issue to be evaluated each time a new subsequent arrangement request came forward. The ... [long-term consent] proposal, in contrast, would require the implausible finding that activities involving major quantities of weapons-usable plutonium were not going to increase proliferation risks for a period of up to 30 years. Such an inherently arbitrary determination is totally at odds with the kind of careful, ongoing scrutiny Congress intended for these transactions when it adopted the increased proliferation risk standard.

See Hearings on Plutonium Use Policy before the Subcommittee on Energy, Nuclear Proliferation and Government Processes of the Senate Committee on Governmental Affairs, 97th Cong., 2d Sess. 10-11 (1982). In short, the elimination of opportunity for subsequent reviews under an agreement for cooperation -- the very heart of the arrangement proposed for EURATOM -- subverts one of the central purposes of the Congress in enacting the NNPA.

In the NNPA, the Congress also elevated the so-called "timely warning" criterion of Section 131 to a place of central prominence in the statutory scheme. Section 131b.(2) of the Act, 42 U.S.C. § 2160(b)(2), provides that, in assessing the appropriateness of requests to reprocess U.S.-origin fuel, the Administration must make a determination that such reprocessing "will not result in a significant increase in the risk of proliferation", giving "foremost consideration ... to whether or not the reprocessing ... will take place under conditions that will insure timely warning to the United States of any diversion well in advance of the time at which the non-nuclear-weapon state could transform the diverted material into a nuclear explosive device."

The "timely warning" criterion is a critical element of the Act's non-proliferation regime. See S. Rep. No. 467, 95th Cong., 1st Sess. 10-12 (1977); 124 Cong. Rec. S.1310 (daily ed., February 7, 1978) (Statement of Senator Glenn). It was intended by the Congress to be primarily a technically-based criterion,

judged in light of the workability of safeguards. E.g., H.R. Rep. No. 587, 95th Cong., 1st Sess. 18-19 (1977); S. Rep. No. 467, 95th Cong., 1st Sess. 11-12 (1977). More than ten years ago, the Nuclear Regulatory Commission confirmed this interpretation in connection with the first major shipment of U.S.-controlled plutonium to Japan, stating, "Congress intended timely warning to be essentially a technical matter involving such factors as safeguards measures applied to the material and the technical ease of incorporating the material into a nuclear explosive device." Letter, dated September 13, 1984, from the Nuclear Regulatory Commission to the Department of Energy, cited in S. Rep. No. 275, 100th Cong., 1st Sess. 5 (1988).

Yet, in the Administration's hands in connection with the EURATOM Agreement, the criterion is treated as essentially a political one, with only the most cursory discussion of technical issues. This leaves the criterion little different than the catch-all statutory standard of "inimicality" under Section 131. See Department of Energy, Analysis of Consents and Approvals 54-64, 67-68 (September 8, 1995) (the "DOE Analysis"), H. Doc. No. 138 at 213-223, 226-227. Such treatment essentially empties the criterion of meaning and relevance.

Finally, the NNPA was enacted, in part, to give the Congress and the public a continuing opportunity to scrutinize implementation of nuclear cooperation activities. See, e.g., 123 Cong. Rec. 30295 (September 22, 1977 (Statement of Rep. Zablocki); 124 Cong. Rec. S.1310 (daily ed., February 7, 1978) (Statement of Senator Glenn). Under the EURATOM Agreement, however, there may well be radical, highly sensitive changes in European atomic energy programs over time. All manner of future facilities for plutonium handling and use (including both conventional and advanced reactors), not only in the EURATOM countries of today but also in a EURATOM of tomorrow stretching from the Atlantic to the Urals, can be brought under the umbrella of authorized activities by a simple notification procedure.

There is no requirement whatsoever in the EURATOM Agreement that the Congress or the public be notified or that changes in the nature and scope of European programs be subject to any effective oversight or review. Indeed, under Article 8(3) of the Agreement, even the names and locations of facilities where U.S.-origin plutonium may be stored and used must be held "confidential" by the United States, if EURATOM so requests. When this lack of transparency is coupled with the lack of obligation in the Agreement upon EURATOM to provide the United States with current inventory information so as to allow the tracking of U.S.-origin highly enriched uranium and plutonium, it is plain that the agreement reached scarcely comports with the Act's solicitude for an "open" process of nuclear cooperation.

(2) EURATOM And the Concerns of the Framers of the NNPA

There is no doubt that the situation in EURATOM was at the forefront of Congressional concern in 1978. The existing agreements for cooperation with EURATOM did not reserve to the United States any consent rights over the reprocessing of U.S.-origin fuel and the subsequent use of recovered plutonium. The Congress plainly wanted this situation changed.

In the NNPA, the Congress adopted a time-limited waiver of the basic export requirement that the United States have prior approval rights over reprocessing. Act, Section 126a.(2), 42 U.S.C. § 2155(a)(2). This waiver was for an initial twenty-four months, subject to annual renewal by the President thereafter. However, the Congress could not have been more clear or explicit in stating its intention that the President was to proceed to renegotiate the agreements with EURATOM to remedy their deficiencies, i.e., to secure consent rights over reprocessing and plutonium use. H.R. Rep. No. 587, 95th Cong., 1st Sess. 23-24 (1977); S. Rep. No. 467, 95th Cong., 1st Sess. 16-17 (1977). The House Report indeed underscored in this context the "central aim of the bill ... to assure that rational criteria are evenly and consistently applied," H.R. Rep. No. 587 at 24, while the Senate Report stressed that acceptance of U.S. approval rights over reprocessing was a "necessary provision[]" of any new agreement with EURATOM. S. Rep. No. 467 at 17.

(3) The Past Debate over Consent Rights

The proper implementation of the NNPA consent rights regime has been the subject of heated debate over the years. The legality of so-called "advance, programmatic consents" given concurrently with entry into force of new agreements has been particularly controversial. The first advance consent arrangements, with Sweden and Norway, were subject to litigation challenging their lawfulness. This litigation was ultimately dismissed on separation of powers grounds, without the court ever passing on the legality of the consent arrangements themselves. See Cranston v. Reagan, 611 F. Supp. 247 (D.D.C. 1985).

More far-reaching arrangements with Japan, although they eventually entered into force, were found to be contrary to the NNPA by the Senate Foreign Relations Committee, which concluded, "The consent embodied in this agreement ... is wholly contrary to the case-by-case review procedures mandated by the Nuclear Non-Proliferation Act and to the intent and spirit of that act ... [and] renders the 'timely warning' criterion [42 U.S.C.S. 2160(b)(2)] of the Nuclear Non-Proliferation Act meaningless." S. Rep. No. 275, 100th Cong., 1st Sess. 4 (1988). These views were echoed by a majority of the members of the House Foreign Affairs Committee in a December 21, 1987 letter to President

Reagan. Similar conclusions were reached by the Comptroller General, see General Accounting Office Report No. B-230201 (February 29, 1988), and the American Law Division of the Congressional Research Service. American Law Division, "U.S.-Japanese Nuclear Cooperation Agreement and Its Conformance to Legal Requirements" (February 5, 1988).

The grounds for finding programmatic, advance consent arrangements contrary to the NNPA -- elimination of case-by-case reviews conducted periodically over the term of an agreement and dependence upon a political, rather than technical, "timely warning" determination -- are as valid today as they were a decade ago. Indeed, there have been no changes in law or fact that would warrant any different conclusions. To the contrary, the prospect of many tons of surplus, stockpiled plutonium (most of it from U.S.-origin nuclear fuel) entering commerce from European plants make these grounds all the more compelling.

(4) The Radical Nature of The EURATOM Agreement

The advance consent arrangements subject to criticism in the past, for all their legal infirmities, were at least entered into incidentally to new agreements for nuclear cooperation whose underlying text appropriately mirrored the guarantees required by Section 123. Indeed, until now, every new agreement for cooperation, even when accompanied by advance, programmatic consent arrangements, has on its face been consistent with the mandate of the NNPA. This includes agreements with Japan, Sweden, Norway, Finland, Hungary, the Czech and Slovak Republics, Poland and South Africa. To the extent any guarantee has not been included, e.g., a guarantee with respect to the use and retransfer of U.S.-origin "sensitive nuclear technology", the Administration has affirmed that the activities which would otherwise necessitate such a guarantee would not be permitted. See, e.g., H. Doc. No. 163, 98th Cong., 2d Sess. 6, 71, 87-88 (January 26, 1984) (U.S.-Sweden Agreement); H. Doc. No. 128, 100th Cong., 1st Sess. 9, 229 (November 9, 1987) (U.S.-Japan Agreement).

The EURATOM Agreement goes far beyond any prior accord in loosening U.S. controls, abandoning any textual pretense of complying with the NNPA. The new EURATOM Agreement represents a frontal assault on the basic U.S. consent rights regime. Although the Administration throughout the NPAS and DOE Analysis persistently characterizes the provisions of the Agreement as providing U.S. "consents" for various EURATOM activities, this is to engage in a semantic sleight of hand. In fact, the EURATOM Agreement on its face does not reserve U.S. consents over retransfers out of EURATOM and reprocessing and plutonium use within EURATOM. Instead, its clear text, with no reservation of consent, provides authorizations, good for the life of the

Agreement, for retransfers and for fuel cycle activities within EURATOM that by law should be subject to consent rights. Indeed, as a practical matter, the Agreement delegates to the Europeans the power to determine whether any particular activity would or would not be consistent with basic U.S. non-proliferation standards.

At the same time, the Agreement essentially disables the United States from intervening in the operation of the Agreement by such means as suspending U.S. consents for activities whose proliferation risks turn out to be unacceptable. Indeed, since there are no "consents" to be "suspended", the only option available to the United States in such circumstances is suspension of cooperation itself, in whole or in part, with all EURATOM members, not just suspension of activities at particular facilities or with particular countries. The net result is that the EURATOM countries effectively will be free to go their own nuclear way, utilizing U.S.-origin nuclear facilities, equipment and fuel, with little or no oversight or control by the United States.

Given the anticipated expansion of EURATOM to include a number of Eastern European nations which will then enjoy the full array of rights and privileges accorded under the Agreement with regard to U.S.-origin, weapons-usable nuclear materials, it is obvious that the legal deficiencies of the Agreement are not merely technical in nature but carry with them serious national security implications for the United States.

The Specific Legal Deficiencies of the EURATOM Agreement

The EURATOM Agreement reflects an unparalleled capitulation to the negotiating demands of a U.S. trading partner and is deeply disturbing as a matter of non-proliferation policy for numerous reasons. For example, as acknowledged by the Administration, it is significantly less rigorous than the much-criticized agreement with Japan with respect to "retroactivity, the storage consent right, the perpetuity of certain consent rights and the procedures for ensuring that the IAEA will apply effective safeguards on facilities added to the delineated program." NPAS at III-11, H. Doc. No. 138 at 132. Concurrently, it also makes it much more difficult for the United States to suspend its approval for the return of plutonium to Japan under the terms of a prior subsequent arrangement in the event of safeguards, physical security or other proliferation or security-related problems. Indeed, the United States gives up its broad discretion to suspend that arrangement and substitutes for that discretion the same onerous criteria for suspension as the criteria for suspending fuel cycle activities under the new EURATOM Agreement (Agreed Minute, Paragraph B.5).

Furthermore, the Agreement fails to protect key U.S. non-proliferation interests. Thus, it does not secure perpetuity of some of the few critical controls over future uses that it has, e.g., the prohibition on enrichment of U.S.-origin uranium above 20% without U.S. consent. NPAS at III-9, H. Doc. No. 138 at 130. Its controls likewise do not apply to previously supplied reactors (and thus to non-U.S. material used in or produced through the use of such reactors), except to the extent identical controls existed under prior agreements. NPAS at II-26, III-8-9, H. Doc. No. 138 at 119, 129-130. In addition, it "does not contain the standard provision that all cooperation thereunder is subject to applicable treaties, laws, regulations and license requirements in force for the respective parties," NPAS at III-10, H. Doc. No. 138 at 131, thus putting the United States in a potential breach situation should the Congress in the future make statutory changes that would require more rigorous controls to be imposed. Indeed, Article 13(A)(1)(b) of the Agreement effectively gives EURATOM the right to consider its obligations terminated should the United States impose new conditions which result in any "prevention of nuclear trade envisaged under this Agreement." See NPAS at III-11, H. Doc. No. 138 at 132.

Lastly, the Agreement runs counter to the Administration's stated non-proliferation policy not to "encourage" reprocessing and to "seek to eliminate where possible the accumulation of stockpiles of highly-enriched uranium or plutonium" in civil programs. 29 Weekly Comp. of Pres. Doc. 1901 (September 27, 1993). In fact, the Administration acknowledges, "Use of U.S.-obligated plutonium throughout the Member States of EURATOM will ... follow as a natural and foreseeable result from ... the Agreement." DOE Analysis at 52, H. Doc. No. 138 at 211. Although the Administration pledged in its non-proliferation policy statement to "maintain existing commitments", nonetheless, the Administration's protestations to the contrary notwithstanding, neither the expiring 1960 agreement with EURATOM nor negotiating offers of prior Administrations can credibly be claimed to constitute "existing commitments".

For all these faults, the most fundamental deficiencies of the Agreement still lie in (1) its failure to secure necessary consent rights and, relatedly, (2) its failure to secure meaningful rights to suspend authorized fuel cycle activities such as reprocessing and plutonium use. As a result of these failures, the Agreement is not in compliance with the requirements of Section 123 of the Act.

(1) The Absence of Consent Rights

The gross deficiencies in the EURATOM Agreement in failing to provide for U.S. consent rights are apparent upon even the most superficial examination. The Agreement manifestly does not

contain four of the nine specific guaranty provisions mandated by Section 123 of the Act.

(a) Retransfers

Section 123a.5 of the Act, 42 U.S.C. § 2153(a)(5), requires that new agreements for nuclear cooperation include a guaranty that U.S.-origin facilities, materials and equipment "will not be transferred ... beyond the jurisdiction or control of the cooperating party without the consent of the United States." Article 8(1)(C) of the EURATOM Agreement confounds this requirement. It simply authorizes retransfers "according to procedures set out in the Agreed Minute." Paragraph B of the Agreed Minute, in turn, provides that retransfers by EURATOM are permissible, for the life of the Agreement and without further notification, as long as they are to countries identified as authorized transferees in certain lists provided by the United States.

Several sorts of retransfers are contemplated. An initial list, provided by the United States to EURATOM upon entry into force of the Agreement, will permit transfers of "low enriched uranium, non-nuclear material, equipment and source material" ("8(1)(C)(i) transfers"). Agreed Minute, Paragraph B.2. If requested by EURATOM, the United States must also provide a subsequent list which will permit transfers of "irradiated nuclear material" and "other nuclear material", inter alia, for fuel cycle activities such as reprocessing and plutonium use ("8(1)(C)(ii) and (iii) transfers"). Agreed Minute, Paragraph B.3.

There are minimum requirements for inclusion of a country on the lists of authorized transferees. For example, the third country must be a party to an agreement for cooperation with the United States (Agreed Minute, Paragraph B.2). Further, the United States does retain the power to delete countries from its lists of authorized transferees (Agreed Minute, Paragraph B.4); and, as affirmed by the Administration, preparation of a list for 8(1)(C)(ii) and (iii) transfers will entail a subsequent arrangement under Section 131 of the Act. See NPAS at II-11, 14, House Doc. No. 138 at 104, 107.

Nevertheless, it is apparent that the effect of these provisions, once a list is provided by the United States, is to allow EURATOM essentially to retransfer without further U.S. oversight and control, i.e., without U.S. "consent". It is pure sophistry to claim, as the Administration does, that "consent" is maintained, simply because transfers must take place "according to the procedures set out in the Agreed Minute." NPAS at II-9, H. Doc. No. 138 at 102. In fact, since an initial list has already been provided, freedom to transfer will commence, for

8(1)(C)(i) transfers from EURATOM, with the entry into force of the Agreement and may continue over a period of thirty years or more. See Draft U.S. Note Regarding Third Countries Authorized to Receive Retransfers, H. Doc. No. 138 at 245.

(b) Reprocessing

Section 123a.(7) of the Act, 42 U.S.C. § 2153(a)(7), requires that agreements for cooperation specify that U.S.-origin fissile material may not be "reprocessed, enriched or ... otherwise altered in form or content without the prior approval of the United States." Article 8(2) of the EURATOM Agreement, however, provides that reprocessing and alteration in form or content "may be carried out pursuant to this Agreement within the territorial jurisdiction of either Party in facilities forming part of the delineated peaceful nuclear programs described in Annex A."

Annex A to the Agreement does contain a list of facilities in EURATOM constituting a "Delineated Peaceful Program". It might at first blush seem that the authorization for reprocessing and alteration in form or content is therefore limited. In fact, it is open-ended.

Paragraphs B.6 and 7 of the Agreed Minute provide that EURATOM, in its sole discretion and without need for any U.S. approval, may add facilities to its "delineated program" anywhere within its territorial jurisdiction at any time, simply by so notifying the United States in writing and providing certain minimal information, i.e., name, type and location, together with a confirmation that safeguards and physical security measures will be applied. As a practical matter, therefore, EURATOM countries (including any new members in the future, such as former East Bloc countries) are free, without U.S. "approval", to conduct reprocessing operations anywhere they choose at any time during the term of the Agreement. This freedom goes considerably beyond that afforded to Japan in 1988, since, in the Japanese case, under the terms of the U.S.-Japan "Implementing Agreement", new facilities must at least conform with agreed "safeguards concepts" -- concepts spelled out in some detail for specified facilities in the accord itself. See H. Doc. No. 128 at 42-43, 98-144. See also NPAS at III-7-8, H. Doc. No. 138 at 128-129. No such detail governing safeguards is included in the EURATOM Agreement.

(c) Storage of Plutonium and Highly Enriched Uranium

Section 123a.(8) of the Act, 42 U.S.C. § 2153(a)(8), provides that agreements for cooperation must include a guaranty that plutonium and highly enriched uranium "will [not] be stored

in any facility that has not been approved in advance by the United States." Article 8(3) of the Agreement imposes some minimal protections on facilities where such material may be stored in EURATOM, i.e., application of minimal physical protection levels established by the International Atomic Energy Agency, but otherwise imposes no restrictions, other than a simple notification requirement, on the nature and location of facilities, including a multitude of reactors, within EURATOM where fuel cycle activities involving U.S.-origin plutonium and highly enriched uranium may occur. . Indeed, the only obligation is that EURATOM "record its facilities on a list, made available" to the United States. It can make changes to that list at any time, and the United States has no power to veto storage in any particular facility. In short, plutonium and highly enriched uranium will be able to flow freely to any facilities within EURATOM's jurisdictional confines, including countries from the former East Bloc which are not now EURATOM members but which may become members in the future. In such circumstances, in no way can the United States be said to have retained advance approval rights, as required by the NNPA, over the facilities in which these highly dangerous materials may be kept.

(d) Sensitive Nuclear Technology

Section 123a.(9) of the Act, 42 U.S.C. § 2153(a)(9), specifies that agreements for cooperation must include a guaranty that all the requirements of Section 123 will apply to any special nuclear material, production facility or utilization facility produced or constructed through the use of "sensitive nuclear technology" supplied by the United States. The EURATOM Agreement contains no such guaranty. At the same time, a "Side Letter" to the Agreement affirms that such technology "may be transferred to the Community" in some fashion that is outside the terms of the Agreement. "Sensitive nuclear technology" (defined in Section 4(a)(6) of the NNPA) is technology "which is not available to the public and which is important to the design, construction, fabrication, operation or maintenance of" enrichment, reprocessing and heavy water production facilities -- facilities which pose the greatest proliferation risk. It was meant to be subject under the Act to the same controls applicable to facility and fuel exports. The clear suggestion in the EURATOM Agreement that, despite the absence of such controls in the Agreement, sensitive nuclear technology still might be transferred to EURATOM negates the very purpose of the statutory provision and is flatly contrary to the NNPA.

(2) The Absence of Meaningful Suspension Rights

Compounding the deficiencies of the EURATOM Agreement in the area of consent rights, the Agreement does not reserve to the

United States any realistic possibility of obtaining a suspension of activities within EURATOM that turn out to pose unreasonable proliferation risks or threats to U.S. national security. In a May 26, 1988, letter to former Congressman Stephen Solarz, then Deputy Secretary of State John Whitehead affirmed that long-term consents for fuel cycle activities provided in connection with the nuclear cooperation agreement with Japan were subject to a "unilateral and unambiguous right [of the United States] to suspend." Such an asserted right provided some comfort to the Congress in acquiescing to the terms of the Japan agreement. No equivalent right, however, can be found in the EURATOM Agreement.

First, there are no consent right provisions as such in the proposed EURATOM Agreement. Consequently, there is no consent that can be given and then be suspended. In the case of Japan, the United States could simply suspend the so-called "Implementing Agreement". The terms of cooperation would then revert to those of the underlying agreement (including case-by-case consent rights). In the case of EURATOM, the United States must fall back on the general provisions (embodied in Article 13(A) of the Agreement, subject to the gloss of the Agreed Minute), which provide either for cessation of further cooperation in toto or for suspension or termination of all or part of the Agreement itself -- a situation which would leave the United States with less, rather than more, control over reprocessing and plutonium use in EURATOM.

Second, under Article 20(2) of the Agreement, purported suspension rights do not cover non-U.S.-origin uranium irradiated in the future in U.S. reactors supplied prior to December 31, 1995. See NPAS at II-26, H. Doc. No. 138 at 119. This leaves the Europeans free in the future to arrange for reprocessing vast amounts of uranium fuel enriched in Europe, even when that fuel may eventually be burned in U.S.-supplied reactors, without any risk that reprocessing might be suspended.

Third, any U.S. right to suspend or terminate activities authorized under the Agreement is severely restricted. Article 13(A) of the Agreement, which specifies the conditions for suspension or termination, essentially limits U.S. rights to the most extraordinary and unlikely situations -- a material violation of the Agreement, abrogation of safeguards, or unlawful detonation of a nuclear explosive device. In fact, these are nothing more than the statutory conditions for termination of cooperation set forth in Section 129 of the Act, 42 U.S.C. § 2158, which the President has no power to trade away in any event, except through a formal waiver process subject to Congressional review and override authority. The Agreement, in short, provides no suspension or termination rights beyond those which are already statutorily-mandated.

Fourth, in those situations described in Article 13(A) where suspension would be justified and where return of U.S.-origin materials might consequently follow in the normal course, the Agreement specifies that, to require return, the United States must "compensate promptly the party for the fair market value thereof and for the costs incurred as a consequence of such removal". See Article 13(B)(9). The Agreement thus imposes an obstacle that is likely to make suspension impossible for all intents and purposes.

Fifth, the limited ability of the United States to exercise its suspension right under Article 13 of the Agreement is further circumscribed, rather than expanded, under the attached Agreed Minute. Paragraphs B.8-13 of the Agreed Minute deal with the suspension of "nuclear fuel cycle activities" under Article 8(2) of the Agreement. Paragraph B.8A.(a) nominally provides that suspension can be ordered on the basis of a judgment that continuation would result in "a serious threat to the security" of the United States or "a significant increase in the risk of proliferation." However, the limitations on the actual exercise of this judgment are manifold:

-- The list of the types of activities which could trigger suspension essentially mirrors the highly restrictive Article 13 criteria, expanded only marginally to include situations of "war", "serious internal disturbances" and "serious international tension constituting a threat of war" (Paragraph B.8A.(a)(vi)) -- situations in which the suspension right is likely inherent in any event under the well-recognized principle of international law, rebus sic stantibus. See Rest. 3rd, Restatement of the Foreign Relations Law of the United States § 336. While the Administration asserts that this list is "illustrative only", NPAS at III-5, H. Doc. No. 138 at 126, it is hard to imagine what other events could have the "same or greater degree of seriousness" justifying suspension.

-- Suspension rights are limited by their terms to activities involving reprocessing and alteration in form or content authorized under Article 8(2). The Agreement provides no express authority for the United States to suspend the authorization under Article 8(3) for the Europeans to store plutonium and highly enriched uranium essentially anywhere they wish. In other words, even if the United States could suspend the Agreement's authorization for reprocessing in a meaningful way, it has no ability to stop the continued commerce in and circulation of previously-recovered plutonium or highly enriched uranium throughout the Community.

-- Under the provisions of Paragraph B.13, suspension rights do not extend to the reprocessing of fuel received in EURATOM under the terms of the prior agreements, i.e., to the vast majority of fuel within EURATOM as of December 31, 1995,

unless EURATOM, in its sole discretion, so elects. EURATOM in fact has the option -- an option which it would undoubtedly exercise -- to "continue to reprocess or alter this 'old' nuclear material." See NPAS at II-26, III-5, H. Doc. No. 138 at 119, 126. Since most, if not all, Japanese spent fuel contracted for reprocessing in Europe has already been shipped to European facilities, and since relatively little low-enriched uranium fuel of U.S.-origin is likely to be sent to EURATOM in the future, this lack of retroactivity guts the effectiveness of any suspension and renders purported suspension rights a nullity.

-- Only the President can make a suspension decision (Paragraph B.8C.), and, even then, the decision can be taken "only in the most extreme circumstances of exceptional concern from a non-proliferation or security point of view" (Paragraph B.12).

-- Perhaps most important, Paragraph B.8D. deprives the United States of the ability to make a facility-specific or activity-specific suspension but instead requires that any decision with respect to activities involving reprocessing/alteration in form or content "apply to the activities of the other party...taken as a whole." In other words, the Agreement would require that the U.S. suspend all nuclear cooperation with respect to these activities with all members of EURATOM in order to respond to problems at a single facility -- a virtual political impossibility which, when considered in tandem with the other limitations discussed above, renders any suspension right illusory. While the Administration contends that this provision affords the United States greater leverage ("significant additional control") over the Europeans, NPAS at II-17, H. Doc. No. 138 at 110, its candid admission that the Europeans, not we, sought its inclusion give the lie to this assertion. NPAS at III-5, H. Doc. No. 138 at 126.

Conclusion -- Options for the Congress

The Congress wanted uniform and unambiguous controls over U.S. exports. The proposed EURATOM Agreement provides nothing of the sort. The Congress, in such circumstances, should not acquiesce in the Administration's assertion that the Agreement fully complies with the requirements of the NNPA.

Congressional rejection of the Agreement as being inconsistent with the NNPA does not leave the Administration without options. The NNPA recognizes that special circumstances might warrant waiver of some NNPA statutory guarantees for individual agreements for cooperation. Thus, Section 123 specifically allows the President to exempt a new agreement from any of its requirements "if he determines that inclusion of any such requirement would be seriously prejudicial to the

achievement of United States non-proliferation objectives or otherwise jeopardize the common defense and security." In that case, as noted above, an affirmative vote of the Congress is necessary to bring an agreement into force.

The provisions of the 1985 "Proxmire Amendment" to the Act, Pub. L. No. 99-64, § 301, 99 Stat. 159 (July 12, 1985), provide a basis for the Congress now to request that the Administration proceed in this fashion, or renegotiate the Agreement. The Proxmire Amendment was intended to reestablish the proper balance of authority between the Executive Branch and the Congress following the Supreme Court's Chadha decision invalidating legislative vetoes. The Conference Report on the Proxmire Amendment makes it clear that if, during the initial consultation period of not less than thirty days with the Foreign Relations and International Relations Committees under Section 123b. of the Act, either Committee deems any provision of an agreement inconsistent with the Act, the President is "expected" to respond either by renegotiating it or resubmitting it with a waiver of statutory requirements. H.R. Rep. No. 180, 99th Cong., 1st Sess. (1985), reprinted in, 131 Cong. Rec. H. 4905, H. 4919-4920 (daily ed., June 25, 1985).

If the Administration deems EURATOM to be a special case, it should so indicate in a forthright manner, and the Agreement should be resubmitted with an appropriate waiver determination. Such an approach would require the Administration to deal honestly with the ways in the EURATOM Agreement varies from statutory requirements and to justify the Agreement in political terms, rather than to do violence to the basic legal framework of non-proliferation controls established by the NNPA. In the same vein, acceptance by the Congress of the Administration's assertion that the EURATOM Agreement is consistent with all parts of Section 123 would entail acceptance of the Administration's tortured logic and a contorted interpretation of statutory language and legislative history. Such an outcome would fundamentally compromise the integrity of the NNPA and create a precedent that could have disastrous future consequences for U.S. non-proliferation efforts and for supreme national security interests.

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EURATOM'S NUCLEAR PROLIFERATION RECORD

On November 29, 1995, the Clinton Administration submitted to Congress a proposed nuclear cooperation agreement, negotiated with EURATOM (the European Community nuclear energy agency) to replace an agreement that expired at the end of 1995. The agreement, if approved by Congress in its present form, would provide a framework for at least the next thirty years of nuclear trade between the U.S. and Europe.

The State Department and the Executive Branch defend the agreement's permissive terms in part by praising EURATOM's "impeccable nuclear non-proliferation credentials,"[1] going so far as to claim that "the EURATOM member states and the European Community itself have long been among the strongest supporters of nuclear non-proliferation efforts worldwide."[2] The Arms Control and Disarmament Agency (ACDA) assessment of the agreement states that "the long experience of Euratom on safeguards and on ensuring adequate levels of physical protection, when combined with the strong nonproliferation credentials and long-term political stability of these democracies, adds credence to the assurance offered by Euratom in the proposed agreement."[3]

Such statements, particularly with regard to the "strong nonproliferation credentials," are not supported by the historical record. Over the years, both EURATOM and its member states have provided key assistance to proliferant nations and often openly flouted U.S. non-proliferation policy and practices. Following is a brief summary of some of the more serious incidents.[4]

[1] President Clinton's letter transmitting EURATOM agreement to Congress, November 29, 1995, in "Proposed Agreement for Cooperation in the Peaceful Uses of Nuclear Energy Between the United States of America and the European Atomic Energy Community (EURATOM)," House Document 104-138, November 29, 1995, p. 1.

[2] Memorandum for the President from Secretary of State Warren Christopher and Energy Secretary Hazel O'Leary, September 22, 1995, p. 3, in ibid., p. 139.

[3] U.S. Arms Control and Disarmament Agency (ACDA), "Nuclear Proliferation Assessment Statement," p. I-5, in ibid., p. 93.

[4] These incidents were researched in part using the Emerging Nuclear Suppliers Database compiled by the Center for Nonproliferation Studies at the Monterey Institute for International Studies.

Paul L. Leventhal, *President.* Peter A. Bradford. David Cohen. Denis A. Hayes. Julian Koenig. Sharon Tanzer. Roger Richter. Dr. Theodore B. Taylor
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France

France refused to join the Nuclear Non-Proliferation Treaty (NPT) until 1992, more than two decades after the treaty came into force.

In the 1960s, France provided the Dimona reactor and reprocessing plant that gave ***Israel*** its nuclear weapon capability. In the late 1980s, France planned to sell another reactor to Israel until the U.S. intervened.

In the 1970s, France offered to provide reprocessing plants to ***Pakistan*** (not a member of the NPT) and ***South Korea***. Fortunately, the U.S. intervened, and neither facility was constructed. France replaced the U.S. as supplier of two 900-megawatt nuclear power plants for ***South Africa***, after the U.S. was barred by law from supplying the reactors and fuel to South Africa. At the time, South Africa was not a member of the NPT and (as it has since admitted) had secretly constructed a number of nuclear bombs. France also agreed to provide a nuclear power plant to Pakistan in the 1980s, but Pakistan was unable to finance it. In 1982, France replaced the U.S. as supplier of enriched uranium fuel to ***India***, a non-NPT state which detonated a nuclear bomb in 1974.

France also supplied a research reactor and highly enriched uranium (HEU) fuel to ***Iraq***. In 1981, Israel destroyed the reactor before it could be used to irradiate unsafeguarded uranium targets, which were to be secretly reprocessed to separate plutonium as part of Iraq's bomb program. Iraq recently admitted that, just before the Gulf War, it instituted a crash program to convert the reactor's original, safeguarded HEU fuel (along with HEU fuel provided by the former Soviet Union) into a nuclear bomb.

In 1995, French President Jacques Chirac insisted on carrying out a campaign of nuclear weapon tests in the South Pacific, contrary to a moratorium observed since 1992 by all other nations but China. President Clinton's request that such tests not go forward was ignored.

France is the world's principal plutonium purveyor, home to COGĒMA, a government-owned monopoly that plans to separate a cumulative total of over 75 metric tons of plutonium from non-nuclear-weapon states' civilian spent fuel by the turn of the century.[5] France also was the most outspoken EU opponent to a new nuclear cooperation agreement with the U.S. based on U.S. prior-consent arrangements as required by the NNPA.

[5] David Albright, Frans Berkhout, & William Walker, World Inventory of Plutonium and Highly Enriched Uranium 1992, 1993, Table 6.9, p. 111.

Germany

Administration assertions to the contrary, Germany has a long history of non-cooperation with the U.S. on non-proliferation. German corporations and middlemen made unsafeguarded transfers of critical components, whole plants, and heavy water to ***Iraq, India*** and ***Pakistan*** after the German government ignored or rebuffed well over one hundred demarches and other communications from the United States and Great Britain protesting the impending exports. Indeed, one German export official said that such demarches "usually end up in my wastepaper basket."[6]

In 1975, Germany agreed to provide full nuclear fuel cycle technology, including enrichment and reprocessing technology, to ***Brazil***, despite the fact that Brazil was not a member of NPT, was suspected of having a secret nuclear weapons program, and had a number of unsafeguarded nuclear facilities. Germany ignored strong U.S. objections to this deal, which for economic and other reasons was never fully implemented.

India was also a beneficiary of German export largesse. Indeed, "the production of heavy water in India, an essential element in the development of its nuclear program, would not have been possible without West German technology."[7] In 1984, the German firm Degussa re-exported 95 kilograms of US-origin beryllium to India, under a license from FRG export authorities. Such re-export requires US permission, but such authorization was neither sought or obtained. Leybold AG also supplied furnaces, useful in fabricating nuclear reactor and weapon components, to both India and Pakistan. Far from cracking down on such exports, in 1993 Chancellor Kohl promised to supply a broad list of dual-use high technology goods to India. By the end of 1994, India had been removed from Germany's export trigger list, the H list. German exports to India no longer require interagency authorization.

India's regional rival ***Pakistan*** received German nuclear assistance as well, in such areas as uranium melting, centrifuge development, and fuel fabrication. German firms also exported such dual-use items as milling machines, hot isostatic presses, and mass spectrometers to Pakistan. All received export licenses despite US protests. In the late 1970s, German firms exported a complete uranium hexaflouride plant to Pakistan under false labels. Such a plant would process natural uranium to prepare it for enrichment to weapon-usable form. In 1989, a smuggling network was uncovered involving two German firms. Between 1983 and 1987, the firms provided Pakistan with uranium shipment containers and 130 metric tons of aluminum for centrifuge housings. The firms also provided Pakistan with tritium (an isotope of hydrogen used to boost the yield of nuclear

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[6] Mark Hibbs, "US Repeatedly Warned Germany on Nuclear Exports to Pakistan," NuclearFuel, March 6, 1989, p. 12.

[7] Harald Muller, The Controversy Over West German Export Policy, GPSP Research Note No. 1, Global Peace & Security Program, Monterey Institute of International Studies, January 1990, pp. 1-2.

weapons and to fuel hydrogen bombs), as well as a tritium purification plant and designs and materials for a tritium production reactor. Some of these items were exported illegally, but some were licensed by West German export authorities.

Iran, due to its support of international terrorism and indications of a secret bomb program, is near the top of the list of U.S. proliferation concerns. However, Germany, despite its new, supposedly tough export control laws, approves about 80 percent of applications for dual-use technology exports to Iran. In late 1993, an International Atomic Energy Agency (IAEA) inspection in Iran noted a site with German-supplied equipment useful in the development of centrifuges for uranium enrichment.

German firms were also the primary suppliers of dual-use technology to ***Iraq's*** secret bomb program, supplying both components for uranium-enrichment centrifuges and the machine tools to build more such components. The IAEA has determined that German engineers provided crucial assistance in the advancement of Iraqi centrifuge development, including the provision of a top-secret set of blueprints for URENCO's most advanced supercritical centrifuge.

German firms also had a hand in ***North Korea's*** nuclear program, providing technical assistance, dual-use furnaces, and zirconium, a metal used in nuclear reactor components.

More recently, Germany's own domestic nuclear policy has clashed with U.S. non-proliferation policy. The German government has rebuffed U.S. requests that it not permit the fueling of the FRM-2, a university research reactor to be built near Munich, with highly enriched uranium fuel. If the FRM-2 is built to use HEU fuel, it would violate a moratorium observed since 1978 by all states but China and Libya on the construction of HEU-fueled reactors. It would also undercut a 20-year, U.S.-led international program to convert all research reactors to low-enriched uranium and thereby end civilian commerce in HEU.

The HEU requirements of the FRM-2 reactor are also driving EURATOM to negotiate purchase of large amounts of HEU from MINATOM, ***Russia's*** nuclear supply agency. Such a deal would undermine the U.S. $12 billion program to purchase HEU from Russia, the objective of which is to ensure that Russian HEU not be sold to anyone other than the U.S., and only after blending down into low-enriched, non-weapons-usable form.

Great Britain

India's nuclear sector has been assisted by British firms. AEA Technology's Dounreay facility reprocesses spent research reactor fuel for India. The U.K. firm GEC allegedly exported sophisticated electronic equipment for nuclear and missile purposes to India over a three-year period.

One of ***Iraq's*** primary front companies for its nuclear technology procurement in the 1980s was Matrix-Churchill, a firm based in Britain. The company channeled many millions of dollars of sensitive technology to Iraq, despite British intelligence awareness of its operations.

Besides France, Great Britain is the world's largest supplier of commercial reprocessing services. British Nuclear Fuels Ltd. (BNFL), a government-owned monopoly, plans to separate over 46 metric tons of plutonium for non-nuclear-weapon states at its THORP facility in Sellafield by 2002.[8] THORP was constructed and opened despite reported objections from the U.S. government, and exists primarily to earn foreign exchange. The British domestic nuclear industry has no plans to use plutonium in its reactors, and in fact is sitting on a stockpile of some 40 metric tons of plutonium for which it has no plans.

Other EURATOM Members

Belgium. Belgian firms have engaged in nuclear deals with ***Iran*** and ***Pakistan***, reportedly providing a cyclotron (useful for enriching uranium) to Iran, and unspecified radioactive materials to Pakistan.

Italy. In the 1970s, Italy secretly provided "hot cells" and other plutonium separation equipment to ***Iraq***. This technology was subsequently used as part of Iraq's nuclear weapons program to separate plutonium at the Tuwaitha facility that was not declared to the IAEA.

Risks of Expanded EURATOM Membership

One concern about nuclear cooperation with EURATOM is the fact that it, like the European Union (EU) of which it is a part, are changing entities. The EU is in the process of expanding eastward, and as of February nine Eastern European nations have signed "Europe agreements" with the EU: Bulgaria, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, and Slovakia. An agreement with Slovenia has been initialed. Each agreement "amounts to a very careful preparation of the candidate country for eventual membership of [sic] the Union."[9]

As EU members, these nations become eligible to join EURATOM, and thereby become parties to the U.S.-EURATOM nuclear cooperation agreement. As the Department of Energy analysis of the proposed agreement noted:

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[8] Albright et al., op. cit.

[9] European Union, "Relations Between the European Union and Central and Eastern European Countries (CEEC)," February 1996.

> If any of the states with which we have agreements [for nuclear cooperation] were to become members of EURATOM, its existing agreement with the United States would become superseded by the U.S.-EURATOM agreement for cooperation. . . . A state with which we did not have an existing agreement for cooperation would also automatically be covered by the U.S.-EURATOM agreement upon its entry into the European Union. Any new member state of EURATOM would therefore by covered by the advance consent arrangements in the U.S.-EURATOM agreement.[10]

These nations would thereby be free to receive U.S.-origin plutonium, highly enriched uranium, and other nuclear materials; reprocess, enrich or re-enrich such materials; and use U.S.-origin, weapon-usable nuclear materials in civilian nuclear facilities for the 30-year or more duration of the agreement. Under the proposed agreement, the U.S. would have no power to control re-transfers of U.S.-origin material within EURATOM, including transfers to former East Bloc nations that join EURATOM.

The eastward expansion of the EU and EURATOM poses a real proliferation risk. The nine nations with applications pending for EU membership all have experienced incidents of nuclear materials smuggling since the break-up of the Soviet Union. A Western European intelligence report "said than in 1992 there were 53 successful or attempted cases of nuclear smuggling from formerly communist countries reported to Western governments, while in 1993 there were 56 cases and in 1994, 124 cases. Seventy-seven of the 1994 cases involved plutonium or uranium."[11]

The Czech Republic alone accounted for a dozen of the 1994 cases,[12] including perhaps the most serious confirmed incident of nuclear smuggling thus far, in which 6.6 pounds of highly-enriched uranium were seized in Prague in December 1994.[13]

Romanian police say they have seized 230 kilograms of uranium from smugglers since 1992.[14]

In Lithuania, about seven metric tons of fuel elements disappeared in 1993 from the

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[10] U.S. Department of Energy, "Determination and Judgement Under Section 131 of the Atomic Energy Act ...," September 8, 1995, p. 77, in ibid., p. 236.

[11] Craig Whitney, "Smuggling of Radioactive Material Said to Double in a Year," New York Times, February 18, 1995 p. A2.

[12] Ibid.

[13] Rick Atkinson, "Prague Says Uranium Found in Czech Auto Could Trigger Bomb," Washington Post, December 21, 1994, p. A27.

[14] "Romania: U Smuggling Said Problem," Nucleonics Week, November 3, 1994, p. 17.

Ignalina nuclear power plant.[15]

It is readily apparent that many of these nations lack the technology and trained personnel to secure nuclear materials effectively. To allow them virtually unlimited access to U.S.-origin plutonium and HEU via EURATOM would be folly in the extreme.

Conclusion

EURATOM member states' statements of support for the NPT and non-proliferation should be weighed carefully against a record of dangerous nuclear exports and commerce in weapons-usable fissile materials. The historical record provides little basis for the Executive Branch's broad claim that EURATOM shares U.S. non-proliferation goals. Both the history with regard to existing members of EURATOM, and the concerns about nuclear smuggling and weak nuclear controls among prospective new members of EURATOM, should be given utmost consideration by Congress in deciding whether to approve the proposed U.S.-EURATOM agreement in its present form.

Steven Dolley
Research Director
February 9, 1996

[15] Mark Hibbs, "Smuggling of Soviet-Origin Material is Escalating, Crime Agencies Say," NuclearFuel, September 13, 1993, p. 35.

Responses from Paul Leventhal, Nuclear Control Institute, to Questions from Senator Stevens

1. In 1987 and 1988 you testified before Committees of the Senate and House in opposition to the then pending U.S.-Japan Agreement, raising many of the objections contained in your testimony today objecting to the U.S.-EURATOM Agreement. In 1988 the Senate rejected; by a vote of 53-30, a resolution to disapprove the U.S.-Japan Agreement. Are there any issues or events that have occurred since 1988 that would enhance your arguments today?

While the Senate rejected a resolution of disapproval in 1988, that vote is not dispositive with respect to either our legal analysis or our policy objections to the agreement. As a matter of law, that vote cannot be interpreted as acceptance of the Administration's legal justifications for the agreement.

As we note in Mr. Greenberg's legal analysis, the grounds for finding programmatic, advance consent arrangements contrary to the Nuclear Non-Proliferation Act---elimination of case-by-case reviews conducted over the term of an agreement and dependence upon a political rather than a technical "timely warning" determination---are as valid today as they were a decade ago. Indeed, there have been no changes in law or fact that would warrant any different conclusions. To the contrary, the prospect of many tons of stockpiled, surplus plutonium (most of it from U.S.-origin nuclear fuel) being generated by European plants, potentially including plants in former East Bloc states that join EURATOM, make these grounds all the more compelling.

Political developments worldwide have strengthened the arguments for restraint in, and strict controls upon, production and use of weapons-usable materials in civilian programs since the Japan agreement. First, the end of the Cold War has allowed the United States and Russia to dismantle some of their nuclear weapons, creating an enormous surplus of plutonium. Indeed, the question of the disposition of this excess material is a key national-security issue in both the United States and Russia. At the time we are seeking to rid the world of excess plutonium, it makes no sense to encourage the separation of plutonium in European civil programs.

Furthermore, the pursuit of nuclear-weapons material by proliferant nations and terrorist groups is now widely regarded as an immediate national and global security threat. The sophisticated program that Iraq was able to develop before the Persian Gulf War is a testament to the weaknesses of the current control regime. While some improvements have been made since then, fundamental weaknesses will remain. Iran, while also seeking to develop a nuclear weapons program, apparently is also pursuing a more direct route to the bomb by purchasing nuclear weapons materials. (See, for example, Irwin Arieff, "U.S. says Iran wants to steal nuke arms capability," Reuter, February 29, 1996.) In addition, the willingness of terrorist groups to undertake acts of mass destruction---exemplified by the bombings of the World Trade Center in New York and the federal building in Oklahoma City, and the subway attack by the Aum Shinrikyo cult in Tokyo---make nuclear terrorism all the more plausible. Indeed, a stolen design for sophisticated laser uranium-enrichment equipment was found among the possessions of the cult. As commerce in weapons-usable material grows, so does the risk of nuclear theft and nuclear terrorism.

With specific reference to the U.S.-Japan agreement, first, our legal analysis notes

that the EURATOM agreement, as acknowledged by the Administration, is significantly less rigorous than the Japan agreement in several key respects (p. 8). (In addition to the points that Mr. Greenberg cites, a Note Verbale to the Japan agreement includes 17 pages of detailed requirements to ensure that the United States can track its nuclear material. The EURATOM agreement includes no such provision. See below.)

Second, events since the entry into force of the U.S.-Japan agreement reinforce the importance of the United States' maintaining the limited controls over U.S.-origin materials that it has under that agreement. In 1994 our Institute disclosed that there is a discrepancy of 70 kilograms of plutonium at a pilot fuel fabrication plant covered by the agreement. Under the Japan agreement, the United States has the clear authority to suspend its consent with regard to that facility, and some Members of Congress thought the Administration should have done so. (As it turns out, Japan is now cleaning out the plant to produce the missing plutonium for the International Atomic Energy Agency, at a cost of $100 million.) Under the EURATOM agreement, if such a problem arose that the plant operator refused to resolve in cooperation with the IAEA, the United States would have to suspend its consent for the operation of all EURATOM facilities at which reprocessing or alteration in form or content of U.S.-origin material takes place---a virtual political impossibility.

2. If Congress rejects the U.S.-EURATOM Agreement, will countries like the U.K. and France be deterred from pursuing efforts to reprocess spent fuel?

There are ample grounds for rejecting the agreement because of its failure to meet the requirements of the NNPA and to serve U.S. national-security interests. However, realizing that Congress would be reluctant to reject an agreement with close allies, we, in conjunction with five other organizations, urge Congress at a minimum to mitigate damage to U.S. vital interests by enacting a series of conditions.

None of the conditions would prevent the United Kingdom and France from continuing to reprocess spent fuel. The two conditions dealing with U.S. consents, Nos. 1 and 2, are restricted to new facilities and new countries and therefore do not affect the already-operating reprocessing facilities in the United Kingdom and France.

More broadly, the approach advocated in the February 23 letter would not shut down European plutonium programs. It does, however, seek to limit the risks associated with those programs, protect against some of the potential dangers to U.S. interests posed by those programs, and ensure that the United States has the ability to take appropriate action to protect its interests.

3. What evidence do you have that, if Congress attaches to Agreement the conditions which NCI has proposed, EURATOM will agree to them?

4. Won't EURATOM regard these conditions as impinging on their sovereign rights?

5. Do you think it is realistic to think that NCI's conditions, if added to the Agreement, will be accepted by EURATOM?...won't they effectively scuttle the agreement?

All three of these questions raise the issue of the anticipated European response to the conditions we propose.

In my testimony, I proposed seven conditions to attach to a joint resolution of approval. In addition, based on other testimony at the February 28 hearing, there should be an eighth condition, namely, that EURATOM provide current data and information, and agree to continue to provide such information over the term of the agreement, with respect to quantities, location and composition of U.S.-origin material in EURATOM, so as to allow the United States to track such material with a reasonable degree of certainty.

The conditions I have proposed are modest and meant to contain, if not eliminate entirely, some of the risks associated with the proposed agreement. None of these conditions interferes with the basic structure of the agreement, and all are grounded in well-established U.S. non-proliferation policy and/or precedent found in previous agreements for nuclear cooperation with other trading partners. Further, in some cases, the conditions are within the unilateral control of the United States to implement or are based upon the Administration's own assurances about the nature of our understandings with EURATOM.

EURATOM has a strong interest in continuing cooperation with the United States, particularly so that it may receive U.S.-obligated materials from third countries, e.g., Switzerland and Japan, for reprocessing within EURATOM, and to return the processed materials to these countries pursuant to a subsequent arrangement with the United States that requires an underlying agreement with the U.S. to be in force. Therefore, there is no reason to assume that the approach I recommend will not ultimately succeed.
The eight conditions vary in nature. Accordingly, to properly assess the need for these conditions, it is essential to consider them individually rather than collectively:

(1) Subsequent Arrangement Procedures for New Facilities in New Countries -- This condition is meant to deal with the addition of former Warsaw Pact countries to EURATOM. It simply provides that, if weapons-useable materials are to be produced or used in such countries, U.S. approval would be required. It does not have any adverse impact on existing programs in EURATOM and is completely consistent with the concept of advance, programmatic approval for "specific, carefully defined programs," as originally articulated by the Reagan Administration in June, 1982. Indeed, it is consistent with the Clinton Administration's own statements that EURATOM approvals are only for a "known Community program." H. Doc. No. 138 at 111. It is no more an impingement upon the sovereign rights of the EURATOM countries than numerous other conditions in the proposed agreement to which the Europeans have acceded, e.g., the need for U.S. consent in order to enrich U.S.-origin uranium above 20%.

(2) Addition of New Facilities in Existing EURATOM Countries -- This condition is meant to clarify what is not now explicit in the agreement, namely, that the addition of a new facility to the Article 8 list will not become effective until the EURATOM notification is acknowledged by the United States. This condition, which does not alter the structure of the agreement, will ensure that the United States will have time to discuss with the Europeans any serious questions that might arise about the risks associated with a new facility before it comes on line. It is consistent with an understanding of U.S. approvals as relating to a "known Community program." H. Doc. No. 138 at 111. Since it is now implicit in the agreement, it should be acceptable to EURATOM. In addition, the requirement that Congress be notified of facility additions is independent of anything within the agreement itself and does no more than establish internal U.S. government processes for agreement implementation, something that falls entirely within the sole discretion of the United States.

(3) Exports Subject to Laws and Regulations -- This is a standard provision found in all our other agreements for cooperation. The State Department affirmed in 1985 that it was essential for maintenance of U.S. flexibility, and it was included as a condition in the joint resolution of approval for the U.S.-China Agreement. The Administration has stated that it is consistent with EURATOM's understanding (House Doc. No. 138 at 131), and so it should not be unacceptable to the Europeans. In any event, it is within the sole discretion of the United States to establish this condition, and European concurrence need not be obtained.

(4) Termination of MINATOM Purchase -- This condition, requiring EURATOM to terminate its arrangements to purchase HEU from Russia, makes no changes to the terms of cooperation with EURATOM under the agreement. The proposed purchase undercuts both the U.S.-led, international RERTR program and the U.S. commitment to purchase Russian HEU for the express purpose of down-blending into low-enriched, non-weapons-usable form. It is also directly counter to the announced U.S. policy to eliminate HEU stockpiling. EURATOM may object to this condition initially, but it should ultimately prove acceptable, since, as demonstrated by widespread acceptance of the RERTR program, including most research reactor operators within EURATOM, the continued use of HEU is not essential to the future of research reactor operations in Europe.

(5) No Transfers of Enrichment, Reprocessing and Heavy Water Production Technologies -- This condition is within the sole discretion of the United States to implement; requires no agreement with EURATOM; is fully consistent with President Clinton's 1993 policy statement that the United States will not encourage reprocessing and will seek to eliminate stockpiles of HEU and plutonium; and does not create any conflict with the agreement, which not only in no way obligates the United States to transfer such technologies to EURATOM but actually does not even contain the provisions necessary to allow such transfers to take place when "sensitive nuclear technology" is involved.

(6) No Mixing of Military and Civilian Materials -- This condition is consistent with U.S. law and policy since the inception of the Atomic Energy Act; is implicit in Paragraph 15 of

the Agreed Minute; and merely clarifies any ambiguity within the agreement to ensure there will no co-processing of U.S.-origin civilian nuclear material with European military material, as may have occurred in the past in a French reprocessing plant. Because peaceful use and safeguards guarantees are fundamental, and have already been accepted by EURATOM, this condition should not be regarded as impinging on sovereignty or indeed even contrary to understandings already reached.

(7) No Precedent -- This condition only goes to the impact of the EURATOM Agreement for future U.S. negotiations. No agreement from the Europeans is required. Moreover, a similar provision was included in the joint resolution of approval for the U.S.-China Agreement and, in the case of the EURATOM Agreement itself, the Administration has stated that it "should not be considered a precedent." H. Doc. No. 138 at 136.

(8) Materials Tracking -- This condition would remedy a significant deficiency highlighted at the February 28 hearing and would simply bring the EURATOM Agreement into conformity with the only other agreement under which the United States has provided long-term approval for widespread fuel cycle activities and plutonium use, namely, the 1988 agreement with Japan. Under the Japan Agreement, Japan is obligated to provide comprehensive, detailed inventory information on an annual basis to the United States. See H. Doc. No. 128, 100th Cong., 1st Sess. 169-185 (Nov. 9, 1987), a copy of which is attached for insertion in the hearing record at the end of these responses. Since such a reporting requirement is acceptable to the Japanese, it presumptively should be acceptable to EURATOM. By the same token, since the United States is obligated to reopen negotiations with Japan if it provides "significantly greater practical advantages" to another trading partner, id. at 66, it is much more sensible for the United States, instead of ratcheting down the Japan Agreement, to ratchet up the EURATOM Agreement to ensure equal treatment.

Finally, the fundamental question is not how the Europeans will respond to the legislation but how well it protects U.S. security interests. When Congress drafted and enacted the NNPA, it clearly understood that some of its provisions would not be immediately acceptable to U.S. nuclear trading partners. Nevertheless, the objective of preventing the spread of nuclear weapons was deemed sufficiently important to risk some potential friction with these countries, and the Congress should take considerable satisfaction that one of the required objectives of the Act---full-scope safeguards as a condition of significant nuclear supply---has been accepted by EURATOM and is now a main tenet of the Nuclear Suppliers Group---despite initially fierce objections from EURATOM members.

European concerns certainly should be taken into account, but they should not be the dominant factor. U.S. security interests and sovereign rights should take precedence, and if properly pursued, will yet prevail.

PROPOSED AGREEMENT BETWEEN THE UNITED STATES AND JAPAN CONCERNING PEACEFUL USES OF NUCLEAR ENERGY

MESSAGE

FROM

THE PRESIDENT OF THE UNITED STATES

TRANSMITTING

A PROPOSED AGREEMENT FOR COOPERATION BETWEEN THE GOVERNMENT OF THE UNITED STATES AND THE GOVERNMENT OF JAPAN CONCERNING PEACEFUL USES OF NUCLEAR ENERGY, INCLUDING AN IMPLEMENTING AGREEMENT PURSUANT TO ARTICLE 11 OF THE PROPOSED AGREEMENT, PURSUANT TO 42 U.S.C. 2153(b)

NOVEMBER 9, 1987.—Message and accompanying papers referred to the Committee on Foreign Affairs and ordered to be printed

U.S. GOVERNMENT PRINTING OFFICE

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No. 329/SCNE

MINISTRY OF FOREIGN AFFAIRS
TOKYO, JAPAN

NOTE VERBALE

The Ministry of Foreign Affairs presents its compliment to the Embassy of the United States of America and has the honor to refer to paragraph 8 of the Agreed Minutes to the Agreement for Cooperation Between the Government of Japan and the Government of the United States of America Concerning Peaceful Uses of Nuclear Energy, signed at Tokyo today (hereinafter referred to as "the Agreement for Cooperation") and to sub-paragraph (a) of paragraph 1 of the Agreed Minutes to the Implementing Agreement Between the Government of Japan and the Government of the United States of America Pursuant to Article 11 of Their Agreement for Cooperation Concerning Peaceful Uses of Nuclear Energy, signed at Tokyo today (hereinafter referred to as "the Implementing Agreement").

The Ministry has further the honor to propose the notification procedures described in the attachment to this Note Verbale which the Government of Japan will implement in accordance with the relevant provisions of the Agreement for Cooperation and the Implementing Agreement referred to above and to confirm that, as the need may arise, the said procedures will be modified of the satisfaction to the two Governments in order that they continue to serve their purposes.

Tokyo, November 4, 1987.

(169)

Attachment

1. Notification pursuant to paragraph 8 of the Agreed Minutes to the Agreement for Cooperation

The Government of Japan will provide the Government of the United States of America, annually, by May 1, with inventories of material, nuclear material, equipment and components within the territorial jurisdiction of the Government of Japan subject to the Agreement for Cooperation as of December 31 of the preceding year as follows:

(1) Beginning and ending inventories (Forms I and III as appended)

a. Nuclear material (quantities as categorized below):

- Natural uranium
- Uranium enriched in the isotope 235
- Uranium depleted in the isotope 235
- Plutonium
- Thorium
- Uranium-233

b. Material, equipment or components:

- Description
- Quantity

(2) Inventory change (Form II as appended):

- Import and export
- Nuclear production and loss
- Other increase and decrease

2. Notification concerning Article 1 of the Implementing Agreement pursuant to sub-paragraph (a) of paragraph 1 of the Agreed Minutes to the Implementing Agreement

(1) The Government of Japan will provide the Government of the United States of America, prior to shipment or as soon thereafter as possible, with the following information regarding transfers pursusnt to Article 1 of the Implementing Agreement beyond and into the territorial jurisdiction of the Government of Japan. (Form IV as appended)

(i) Date of shipment or receipt

(ii) Name and address of shipping and receiving facilities

(iii) Type of nuclear material, chemical and physical form (including irradiation status)

(iv) Quantities of nuclear material as categorized below:

- Natural uranium
- Uranium enriched in the isotope 235
- Uranium depleted in the isotope 235
- Plutonium
- Thorium
- Uranium-233

(2) The Government of Japan will provide the Government of the United States of America, annually, by May 1, with the following information regarding sub-paragraph (a) of paragraph 1 of Article 1 of the Implementing Agreement.

a. Reprocessing in the preceding calender year in facilities listed in Annex 1 within the territorial jurisdiction of the Government of Japan (Form V (a) as appended)

(i) Facility name

(ii) Quantities of plutonium as follows:

- Beginning and Ending Inventories
- Quantities of shipment or receipt
- Material processed or recovered
- Material loss, shipper-receiver differences (SR/D) or "Material unaccounted for" (MUF)

b. Alteration in form or content except by irradiation, in the preceding calender year in facilities listed in Annex 1 within the territorial jurisdiction of the Government of Japan (Forms V (b-1) and (b-2) as appended)

(i) Facility name

(ii) Quantities of plutonium as follows:

- Beginning and Ending Inventories
- Quantities of shipment or receipt
- Material processed
- Material loss, shipper-receiver differences (SR/D) or "Material unaccounted for" (MUF)

c. Plutonium contained in unirradiated fuel elements in facilities listed in Annex 2 within the territorial jurisdiction of the Government of Japan during the preceding calendar year
(Form V(C) as appended)

(i) Facility name

(ii) Quantities of plutonium as follows:

- Beginning and Ending Inventories

- Quantities of receipt, shipment or transfer to irradiation stage
- Material loss, shipper-receive differences (SR/D) or "Material unaccounted for" (MUF)

(3) The Government of Japan will provide the Government of the United States of America, annually, by May 1, with the inventory of plutonium in facilities designated in accordance with sub-paragraph (a) of paragraph 2 of Article 1 of the Implementing Agreement, except facilities for use of nuclear material in quantities not to exceed 50 grams as samples, standards, detectors, targets and neutron sources, within the territorial jurisdiction of the Government of Japan as of December 31 of the preceding year. (Form VI as appended)

Form - I The Beginning Inventory

(a) Nuclear Material As of_____

Stage	Weight								
	Enriched Uranium (g)				Plutonium (g)	Natural Uranium (kg)	Depleted Uranium (kg)	Thorium (kg)	Uranium-233 (g)
	less than 20% in the isotope U-235		equal to or more than 20% in the isotope U-235						
	Element	Isotope	Element	Isotope					
1. Conversion									
2. Enrichment									
3. Fabrication									
4. Reactor									
5. Reprocessing									
6. Development and Demonstration									
7. Others									
Total									

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(b) Material, equipment or compenents

	Description	Quantity
Material		
Equipment		
Components		

175

Form - II The Inventory Change

(a) Nuclear Material

As of _____

Kind of Inventory Change	Weight								
	Enriched Uranium (g)				Plutonium (g)	Natural Uranium (kg)	Depleted Uranium (kg)	Thorium (kg)	Uranium-233 (g)
	less than 20% in the isotope U-235		equal to or more than 20% in the isotope U-235						
	Element	Isotope	Element	Isotope					
Import Nuclear Production Other Increase									
Sub-total									
Export Nuclear Loss Other Decrease									
Sub-Total									
Net Change									

176

Note: The quantities given in "Other Increase" or "Other Decrease" are those resulting mainly from category change, operating losses, shipper-receiver differences and the application of sub-paragaph (b) of paragraph 4 of Article 2 of the Agreement for Cooperation.

(A note on operating losses will be appended as appropriate.)

(b) Material, equipment of components

Kind of Inventory Change	Material*	Equipment*	Components*
Import Other Increase (to be specified)			
Sub-Total			
Export Other Decrease (to be specified)			
Sub-Total			
Net Change			

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* To include description and quantity

Form - III The Ending Inventory

(a) Nuclear Material As of _____

Stage	Weight								
	Enriched Uranium (g)				Plutonium (g)	Natural Uranium (kg)	Depleted Uranium (kg)	Thorium (kg)	Uranium-233 (g)
	less than 20% in the isotope U-235		equal to or more than 20% in the isotope U-235						
	Element	Isotope	Element	Isotope					
1. Conversion									
2. Enrichment									
3. Fabrication									
4. Reactor									
5. Reprocessing									
6. Development and Demonstration									
7. Others									
Total									

178

Note: The quantities of nuclear material subject to the Agreement for Cooperation given herein are not necessarily equal to the aggregate of the corresponding quantities given in the Beginning Inventory and the Inventory Change, due mainly to the existence of "Material unaccounted for" (MUF).

(A note on MUF will be appended as appropriate.)

(b) Material, equipment or compenents

	Description	Quantity
Material		
Equipment		
Components		

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Form IV

(a) Transfer beyond the territorial jurisdiction of the Government of Japan to the third countries concerned

Date of shipment from facility in Japan	Name and address		Type of nuclear material, chemical and physical form	Quantities							Batch/ID #
	Shipping facility	Receiving facility		Natural Uranium (kg)	Uranium enriched in the isotope 235 (g)		Uranium depleted in the isotope 235 (kg)	Plutonium (g)	Thorium (kg)	Uranium-233 (g)	
					element	isotope					
											(ANNEXES to be attached)
			Total								

180

(b) Transfer into the territorial jurisdiction of the Government of Japan from the third countries concerned

Date of receipt at facility in Japan	Name and address		Type of nuclear material, chemical and physical form	Quantities							Batch/ID #
	Shipping facility	Receiving facility		Natural Uranium (kg)	Uranium enriched in the isotope 235 (g)		Uranium depleted in the isotope 235 (kg)	Plutonium (g)	Thorium (kg)	Uranium-233 (g)	
					element	isotope					
											(ANNEXES to be attached)
			Total								

Form-V

Reprocessing and alteration in form or content except by irradiation in facilities listed in Annex 1 and plutonium contained in unirradiated fuel elements in facilities listed in Annex 2, within the territorial jurisdiction of the Government of Japan during the preceding calendar year.

(a) Reprocessing Facilities

[Facility name]	Total quantity of nuclear material in initial form area (kg)	Quantity of plutonium (g)			
		Initial form area *	In-process area	Final form area **	Total plutonium
(1) Beginning inventory					
(2) Shipment into (receipt)					
(3) Material processed				***	
(4) Material recovered					
(5) Shipment out	***	***			
(6) Ending inventory					
(7) Material loss, SR/D or MUF					

181

*) the quantity in the first MBA of the facility
(Plutonium in this area is mainly contained in spent fuel elements.)

**) the quantity in the last MBA of the facility
(Plutonium in this area is mainly in nitrate form.)

***) rare cases such as send-back

(b-1) Plutonium Conversion Facilities

[Facility name]	Quantity of Plutonium (g)		
	Initial form area *	Final form area **	Total plutonium
(1) Beginning inventory			
(2) Shipment into (receipt)		***	
(3) Material processed			
(4) Shipment out	***		
(5) Ending inventory			
(6) Material loss, SR/D or MUF			

182

*) the quantity in the first MBA of the facility
(Plutonium in this area is mainly in nitrate form.)

**) the quantity in the last MBA of the facility
(Plutonium in this area is mainly in oxide form.)

***) rare cases such as send-back

(b-2) Plutonium Fuel Fabrication Facilities

[Facility name]	Quantity of Plutonium (g)			Total quantity of nuclear material in final form area (kg)
	Total plutonium	Initial form area *	Final form area **	
(1) Beginning inventory				
(2) Shipment into (receipt)			***	***
(3) Material processed				
(4) Shipment out		***		
(5) Ending inventory				
(6) Material loss, SR/D or MUF				

183

*) the quantity in the first MBA of the facility
(Plutonium in this area is mainly in oxide form.)

**) the quantity in the last MBA of the facility
(Plutonium in this area is mainly contained in MOX fuel elements.)

***) rare cases such as send-back

(C) Additional Facilities where plutonium is located

[Facility name] [Facility type]	Quantity of unirradiated fuel elements containing plutonium	
	Plutonium (g)	Total nuclear material (kg)
(1) Beginning inventory		
(2) Shipment into (receipt)		
(3) Shipment out		
(4) Transfer to Irradiation Stage		
(5) Ending inventory		
(6) Material loss, SR/D or MUF		

Form VI Inventory of plutonium in facilities designated in accordance with sub-paragraph (a) of paragraph 2 of Article 1 of the Implementing Agreement, except facilities for use of nuclear material in quantities not to exceed 50 grams as samples, standards, detectors, targets and neutron sources

As of _____

Facility name	Quantity of plutonium (g)

NUCLEAR ENERGY INSTITUTE

Responses from Marvin Fertel
Nuclear Energy Institute
to Questions from Senator Ted Stevens

March 1, 1996

1. What would be the consequences if the Congress were to approve the Agreement subject to conditions, such as requiring case-by-case approval by the U.S. for new facilities in future EURATOM states?

Any conditions that may be attached to approval of the U.S.-EURATOM Agreement for Peaceful Nuclear Cooperation that would change the terms of the agreement itself would mean that the agreement would not enter into force. The proposed agreement, negotiated by the United States government and the European Commission, fully satisfies all of the requirements of U.S. law. Unilateral requirements that go beyond what was negotiated, such as a condition requiring case-by-case approval for new facilities in future EURATOM states, would be unacceptable to the Europeans and would mean that the agreement would not enter into force without additional—and likely, unsuccessful—negotiations.

The implications of such an outcome to the U.S. industry would be a significant loss of revenues and jobs in the United States. Specifically, no sales of nuclear fuel, engineering/reactor/technical services, and other commercial business with Europe, amounting to an average of $325 million per year in 1993-95, would be lost. In addition, the more than $700 million in annual sales to Japan would be jeopardized.

As stated by William Timbers, president and chief executive officer of the U.S. Enrichment Corporation, in testimony before the Senate Energy and Natural Resources Committee in September 1994, about $2 billion worth of business could be lost by USEC if an agreement is not in place. This would impact the viability of USEC operations and potentially jeopardize their more than 5,000 USEC employees in Ohio, Kentucky, California and Maryland. It would also negatively impact the U.S. government's ability to privatize USEC.

Finally, from the perspective of U.S. non-proliferation goals, this condition—which would result in no agreement—clearly would be counter to achieving the nation's

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goals and would result in a significant reduction of U.S. control over materials already in Europe.

2. What would be the consequences of U.S. conditions to the Agreement prohibiting EURATOM from acquiring highly enriched uranium from Russia?

Again, any conditions that may be attached to approval of the U.S.-EURATOM Agreement for Peaceful Nuclear Cooperation that would change the terms of the agreement itself would mean that the agreement would not enter into force. A requirement on the European Atomic Energy Community (EURATOM) prohibiting it from acquiring highly enriched uranium (HEU) from Russia is counter-productive.

If the agreement did not enter into force, the U.S. would lose its ability to discuss topics of potential concern, including the use of HEU in research reactors. Put simply, a condition prohibiting EURATOM from acquiring HEU from Russia would be unacceptable, negate the value of the agreement's strong U.S. control provisions, and would have no impact on the sale of HEU from Russia to Europe.

3. What would be the consequences of U.S. conditions to the Agreement barring all uranium enrichment or reprocessing technology exports to EURATOM?

Such a requirement goes far beyond the requirements of the NNPA, which imposes stringent non-proliferation requirements for such transfers, but does not ban their occurrence. Such actions could take place consistent with the requirements of the NNPA, though not subject to the U.S.-EURATOM agreement. Attempting to put such a condition on the agreement would be totally inappropriate, unnecessary and would result in the agreement not coming into effect, having all of the detrimental impacts indicated in response to question number one.

4. Is withholding U.S. approval of the proposed Agreement an appropriate means for the U.S. to influence the Europeans' policies and practices concerning reprocessing of spent fuel?

The best means of enhancing the U.S. non-proliferation regime is to approve, unconditionally, the U.S.-EURATOM Agreement for Peaceful Nuclear Cooperation. The agreement, which fully satisfies all requirements of U.S. law, provides a basis for the United States to discuss with our long-time allies any issues that might be raised by European nuclear fuel cycle policies and practices now and in the future.

5. What would you expect the adverse effects on trade and U.S. non-proliferation objectives to be if the proposed Agreement were blocked from going into force?

In addition to the impacts outlined in NEI's testimony before the committee, the implications of such an outcome to the U.S. industry would be a significant loss of revenues and jobs in the United States as noted previously in response to the first question. Specifically, U.S. sales to Europe amounting to an average of $325 million per year in 1993-95, would be lost, and more than $700 million annual sales to Japan would be jeopardized.

In the United States, the impact on the 110 operating nuclear power plants would be a destabilization of the international fuel supply market, and the likelihood of ensuing increases in fuel cost and decreases in reliability of their fuel supplies.

From the perspective of U.S. non-proliferation goals, nonrenewal of the agreement clearly would be counter to achieving the nation's goals and result in a significant reduction of U.S. control over nuclear materials already in Europe.

6. Relative to the agreement, how should the Congress balance our desire to expand U.S. high-technology exports, and our responsibility to avoid actions which would facilitate the spread of nuclear weapons?

There is no balance necessary, nor should there be. The proposed agreement clearly strengthens the non-proliferation regime by providing all of the guarantees and controls required by the Nuclear Non-Proliferation Act of 1978, including full-scope safeguards in non-nuclear weapons states, safeguards in perpetuity, assurances from EURATOM that U.S.-obligated materials will be used only for peaceful and non-explosive uses, guarantees of adequate physical protection for materials and equipment of U.S. origin and the requisite U.S. consent rights over retransfers, reprocessing, enrichment and the alteration in form or content and storage of sensitive nuclear material.

The United States may unilaterally suspend this consent in any circumstance that would result in increased risk of nuclear proliferation or threat to U.S. security. The previous U.S.-EURATOM agreement contained no such U.S. consent rights over reprocessing, alteration in form and content, or storage of plutonium and other weapons-usable materials. Clearly, the new agreement represents significant enhancements of our non-proliferation infrastructure. As stated in my testimony, NEI believes a strong multilateral non-proliferation regime is the underlying foundation that is essential for peaceful nuclear commerce and the economic benefits such commerce provides to the United States. This agreement fulfills that purpose.

7. The proposed agreement imposes no U.S. control over the rights of EURATOM to add new member states. Should the Congress and the American people be concerned that the possible future inclusion in EURATOM of Central or Eastern European countries will increase the risk of nuclear proliferation or diversion of U.S. nuclear equipment or materials into nuclear weapons use?

No. The United States currently has bilateral agreements for peaceful nuclear cooperation that fully satisfy U.S. law with Poland, the Czech Republic, Slovakia, Hungary, and Bulgaria that were considered by Congress before they entered into force. In addition, the United States is negotiating a bilateral agreement with Romania.

If the EURATOM membership is expanded to include Central and Eastern European nations, these countries would acquire both the rights and obligations of the U.S.-EURATOM agreement. The European Union imposes strict non-proliferation requirements as a condition for membership. Any nuclear activity in a member state that became part of EURATOM would be subject to the stringent non-proliferation, safeguards, and physical protection requirements of both the European Union and the agreement.

Any candidates for membership would have to be parties to the Nuclear Non-Proliferation Treaty and accept IAEA safeguards on all of their nuclear activities. When a nation joins EURATOM, it must abide by the agreement and accept EURATOM safeguards on its activities.

As Dr. Schlesinger pointed out in his testimony, subjecting Central and Eastern European nations to EURATOM safeguards, as well as the NPT, full-scope IAEA safeguards and the other non-proliferation conditions in the agreement, is a positive step toward non-proliferation.

Also, given the U.S. right to unilaterally suspend its consent—affecting all facilities in EURATOM that were granted consent—the impact on countries like France and the United Kingdom is such that their diligence in accepting members into EURATOM and their assurance of the application of safeguards required by EURATOM, IAEA and our agreement, would clearly be heightened to ensure consent rights weren't revoked.

Prepared Statement of William H. Timbers, Jr.,
President and Chief Executive Officer, United States Enrichment Corporation

Mr. Chairman and Committee Members:

The United States Enrichment Corporation (USEC) is a global nuclear energy company created by the Energy Policy Act of 1992 to operate the government's commercial uranium enrichment activities. USEC is a government corporation in the process of being privatized.

The Senate Committee on Energy and Natural Resources conducted a hearing on the EURATOM Agreement in September 1994. At that hearing I testified as to the vital need to renew that agreement. Today, hopefully the Congress is only a few weeks away from doing so The new EURATOM agreement is vital to our nation's non-proliferation and international commercial interests. There are three principal areas those strategic interests impact upon.

- The first is non-proliferation. The pending Euratom agreement strengthens our ability to achieve U.S. Non-proliferation goals; we should avoid advancing any alterations or new conditions which could weaken acceptance by current and future nations as signatories

- The second area is commercial trade. Through the EURATOM agreement, many years of commerce in peaceful nuclear applications have contributed to both U.S non-proliferation interests and commercial interests. We should not put at risk the substantial USEC and U.S. nuclear industry commercial interests which will be facilitated by the pending agreement.

- The third is our leadership role. We should not put at risk the U.S.'s constructive and influential role in the world nuclear industry which, for decades, has been facilitated and advanced through the successful operation of the Euratom agreement and the resulting cooperation and trade.

Non-proliferation, commercial interests, influence through trade relationships, continuity and consistency are all at stake if the agreement is not renewed or if changes and conditions are included in it which are viewed by signatory nations as inimical to their legitimate interests

Non-Proliferation Impacts:

In the Agreement now before the Congress, the Administration provides a strong framework and vehicle for continuing international cooperation in the peaceful use of nuclear energy. It requires safeguards to assure proper use and protection and it provides continuity and certainty about the procedures involved in commercial matters. All of these factors advance our nation's leadership in non-proliferation matters and its commercial interests.

And, USEC also has a stake and role in advancing them.

- Seventeen percent of the world's electric power is generated by utilities using nuclear fuel and USEC is the global market leader in providing customers with nuclear fuel enrichment services. Thirty-five percent of USEC's business is directly affected by the EURATOM agreement. A significant number of USEC utility customers are subject to and conform with EURATOM Agreement safeguards.

- USEC is demonstrating that commercial arrangements can support and advance non-proliferation goals and practices. We are implementing the historic government-to-government "Megatons to Megawatts" commercial contract with Russia. Through this contract we acquire and sell low enriched uranium (LEU) fuel for power plants derived from highly enriched uranium which the Russians have extracted from Soviet era nuclear warheads. In 1995, these LEU shipments to USEC from Russia were equivalent to approximately 300 dismantled nuclear warheads. In 1996, that quantity will nearly double. The total weapons equivalent of the 20 year Megatons to Megawatts contract is 25,000 nuclear warheads. This demonstrates a viable nexus between commerce, non-proliferation goals and public policy; for USEC to complete its obligations under this agreement, it must sustain its economic and financial strength.

Continuity of the EURATOM Agreement is Essential to Facilitate Commercial Trade:

USEC is the global market leader in uranium enrichment, serving 63 utility customers in 14 countries including the United States. It is obvious that we have an enormous stake in competing for and serving international customers. The EURATOM agreement is a fundamental mechanism which makes our international participation, competition and leadership possible. Conversely, anything that is seen by signatories and customers to compromise their confidence in the agreement would seriously hamper our international trade, business performance and potential. A non-viable EURATOM agreement could have serious consequences for the national interest in several areas.

- It would cripple USEC sales abroad, potentially reducing our income by $2 billion over the next ten years. That would also reduce or eliminate our contribution to the U.S. balance of payments. In 1995, USEC accounted for five percent of our nation's energy exports.

- A significant downturn in customers and demand would inevitably affect our operations and the 5,000 employees at our enrichment facilities in Kentucky and Ohio.

- A continuing downturn in our ability to compete internationally would seriously thwart our congressional mandate to maintain a viable domestic uranium enrichment capability.

While these negative impacts must be considered, there are compelling positive impacts we should not ignore. For example, it is widely appreciated that over the years, nuclear commerce has stimulated cooperation among nations that hold different fuel cycle perspectives. It is imperative that we continue and improve upon that track record. As has been noted, the absence of a mutually acceptable agreement could substantially weaken such open commerce and thereby increase risks of commerce outside the reach and protection of safeguards. The result would most certainly weaken global non-proliferation effectiveness. To maintain our positive global influence, the continuity of the agreement will assure the continuity of commerce, with appropriate non-proliferation protection. We are confident the pending EURATOM agreement can achieve these goals.

The EURATOM Agreement has a long track record of success:

It is not as if we are taking these steps for the first time or lack a sufficient track record. For the past 35 years, the United States and the EURATOM member states have demonstrated a firm commitment to the strengthening of global non-proliferation through their adherence to the principles articulated in the agreement for cooperation. It is abundantly clear that the need for safeguards is a paramount concern of all parties, irrespective of frontiers or nuclear fuel cycle approaches. But there are differing views as to how best to implement such safeguards.

A vital factor to be considered is the viewpoint of numerous European utilities and nuclear fuel cycle entities. They assert that controls established by the International Atomic Energy Agency (IAEA) and enforced by EURATOM provides extensive guarantees of safeguards. Further, that practical experience has demonstrated the effectiveness of these systems as well as the good faith of the European countries regarding their support of non-proliferation. It is in the mutual interests of the world community that the new agreement recognizes the sovereign rights of each nation to pursue domestic energy programs and security while maintaining the mutual cooperation that has existed for over 35 years to prevent the proliferation of nuclear materials.

We believe the agreement before Congress accommodates those views with ample protection. On the other hand, the absence of an agreement would impact us far beyond the loss of the nascent and potential market within the countries that are a part of EURATOM. The impact would be worldwide in scope. USEC customers in other countries would also be prohibited from sending U.S. enriched uranium to EURATOM countries. Specifically, U.S. trade with Japan would be adversely affected. As a result, current and potential customers outside EURATOM would understandably be reluctant to limit their options by purchasing enrichment services from USEC.

Consequences of a Failed or Unacceptable EURATOM Agreement:

Should the pending U.S.-EURATOM agreement fail to be renewed, the United States could no longer provide enriched uranium or enrichment services to an electric utility in a EURATOM member country. Neither would it be possible for countries like Japan or Switzerland to transfer U.S.- origin special nuclear material (or special nuclear material produced therefrom) to a EURATOM country for any purpose, including reprocessing.

This would result in U.S.-origin fissionable material and major reactor components being shut out either directly or indirectly from the European and Japanese markets. This effect would stimulate Europe and the rest of the world to fill the enrichment market vacuum. They would be selling their enrichment services or special nuclear materials to, what are now, U.S. customers. If the goal is to end reprocessing, these actions would not do so, as reprocessing is a well established component of fuel cycle strategies of other nations. In fact, it might well stimulate other national commitments to, or expansions of, reprocessing

The hiatus in renewal of the agreement has already had an impact. Several European utilities have expressed to us their concern about committing themselves to future long term purchases of U.S. enrichment services due to the uncertainty regarding the ratification of the new agreement for cooperation. European utilities, unwilling to purchase U.S.- origin material, argue that without the advance consent rights that are in the proposed new agreement, regarding reprocessing and movement of resulting products (primarily plutonium) the administrative, commercial, and financial difficulties of conducting business with USEC would be prohibitive. Utilities in countries that are not members of EURATOM, but are in the process of joining, have expressed similar concerns.

If there is not a new, widely acceptable U.S. EURATOM agreement soon, the future economic effect on the U.S. nuclear industry will likely be so severe that it may be prove fatal to many in the industry. Consider the potential impact upon USEC:

- sales losses for USEC could approach $2 billion over the next 10 years. These would include the loss of existing sales commitments on the books as well as loss of new sales opportunities to existing customers..

- we would be legally locked out of the European market and effectively precluded from being a competitive supplier in the Japanese market.

In Europe, our small but growing share of the market would be extinguished by the failure of an agreement for cooperation. In addition to the $2 billion loss from relinquishing existing hard won sales to the competition, USEC would be prevented from pursuing new customers and enrichment sales in the European market; worth an estimated additional $10 billion over the next 10 years.

The absence of an agreement for cooperation with EURATOM would also have a significant chilling effect on our sales efforts in Asia. Today, the United States has approximately three quarters of the Asian uranium enrichment market, contributing $500 million annually to the U.S. balance of trade, with $400 million coming from Japan alone. As noted, uranium enrichment services provided by USEC in fiscal year 1995 account for almost 1 percent of all U.S. exports to Japan and a total of 5 percent of all U.S. energy exports.

The Japanese take their energy security seriously, placing it on a par with national security due to their lack of a domestic source of fossil fuels. Therefore, failure to have an acceptable new EURATOM agreement could impact our ability to reliably meet Japan's energy needs and undermine a quarter century of trust and cooperation between our two countries on nuclear matters.

U.S. Global Leadership in Nuclear Commerce and Non-proliferation is at Stake:

In conclusion, timely renewal of the U.S. EURATOM agreement will advance U. S. interests in non-proliferation, continue our international trade and maintain our leadership in the international development and safe use of nuclear energy.

Without a viable EURATOM agreement, USEC will lose it's ability to compete in foreign markets like Japan and hurt export sales that enhance the U.S. trade balance. On the order of $2 billion of lost revenue and international trade is at stake with USEC unable to potentially capture a large portion of future new sales to customers and access to a potential $10 billion future market.

- This loss of trade revenue would devastate our business, affect the U.S. balance of trade and constitute a severe blow to the future economic viability of USEC operations, which include more than 5,000 jobs in Ohio, Kentucky, California and Maryland.

- It would endanger the mission given to USEC when Congress established it nearly 32 months ago and which it is in the process of privatizing.

- It would endanger the role we play and the gains we have made in advancing the peaceful use of nuclear energy globally, including the Megatons to Megawatts program. Both of these roles are highly significant and important efforts which support non-proliferation goals.

Mr. Chairman and members of the committee. Taking all these matters into consideration, we respectfully urge renewal of the Euratom agreement as submitted, unaltered and without conditions which might inhibit other nations from having full confidence in the effectiveness and mutual acceptability of the agreement.

The U.S. and nuclear technology in Europe

By Alexander Haig

After years of intense negotiations, the United States stands poised to approve a new agreement with the European Atomic Energy Community (Euratom) which has for 35 years successfully fostered the peaceful uses of nuclear technology. The U.S.-Euratom Agreement for Peaceful Nuclear Cooperation traces its roots to President Eisenhower's "Atoms for Peace" program.

Now, as the congressional review period of the new agreement nears an end, the drums of groups opposed to the U.S.-Euratom agreement are growing louder. If Congress marches to their misguided rhythm and rejects the new agreement — or makes it unacceptable to our European allies — America will lose its voice of leadership at the world's table of nuclear nations.

Because the U.S.-Euratom agreement is a pillar in the legal structure that makes possible U.S. trade in civilian nuclear technologies, it's important for Congress and the American people to tune out the drumbeat of misinformation and fabrications and understand how important this landmark agreement is.

Alexander Haig is a former secretary of state and NATO commander.

On the most fundamental level, the U.S.-Euratom agreement is instrumental in establishing national commitments — enforceable under international law — for civilian nuclear commerce between nations under appropriate safeguards.

The U.S.-Euratom agreement serves as the cornerstone of the Atlantic Alliance's shared commitment to nuclear non-proliferation.

The U.S.-Euratom agreement not only forms the basis for cooperative transatlantic transfers of nuclear products, services and technology, but it also serves as the cornerstone of the Atlantic Alliance's shared commitment to nuclear non-proliferation.

The importance of the agreement to maintaining America's position as a reliable worldwide supplier should not be underestimated. The nuclear-related revenues received by American companies doing business under Euratom exceed $4 billion. Without U.S.-Euratom, America would be prohibited from exporting nuclear materials or technology to its strongest trading partner — the European Union. U.S. trade with Japan — the largest single purchaser of American nuclear power equipment, materials and services — would be adversely affected as well. Lack of an agreement would mean a loss of up to 200,000 American jobs related to Japan's extensive nuclear-plant building program over the next 15 years.

One of the loudest — and most misleading — claims of the anti-Euratom drumbeaters is that the agreement opens up trafficking in materials for atomic weapons. Despite the vigorous rhetoric of those opposed to splitting atoms for any purpose, the reality is that the agreement will be instrumental in designing and implementing even more stringent safeguards than those already in place. All Euratom member states are parties to the Treaty on the Non-Proliferation of Nuclear Weapons. These states strongly support the safeguards system of the International Atomic Energy Agency. Added to these regimes is Euratom's own highly developed and effective safeguards system.

America has consistently kept its non-proliferation guard up since the first U.S.-Euratom agreement. In each of the nearly 20 new nuclear commerce agreements — or amendments entered into since the original agreement — the U.S. government has successfully negotiated to obtain all of the controls required by the Nuclear Non-Proliferation Act.

The groups attempting to block the Euratom agreement because they oppose reprocessing of spent nuclear fuel and using plutonium in commercial nuclear power plants have got it all wrong. If Congress rejects the U.S.-Euratom agreement or modifies it to make the agreement unacceptable to our European allies, the United States will have forfeited this opportunity to play a valid, appropriate role with regard to European nuclear programs and to achieve the controls envisioned by the Nuclear Non-Proliferation Act.

If the anti-Euratom drummers would put down their sticks long enough for a quiet reality check, they'd hear the echoes of President Eisenhower's call for "Atoms for Peace" in the U.S.-Euratom agreement. Nearly 50 years ago, President Eisenhower articulated a vision of commerce in peaceful nuclear technologies in the interest of all mankind under effective international safeguards against their misuse. These are the words Congress should heed as it prepares to act on the new agreement.

TESTIMONY OF STEVEN R. SPECKER

VICE PRESIDENT & GENERAL MANAGER

GENERAL ELECTRIC NUCLEAR ENERGY

Before the

Committee on Governmental Affairs

U.S. Senate

Hearing on the U.S.-EURATOM Agreement

February 28, 1996

{Submitted for the Hearing Record}

Mr. Chairman, I want to thank you and your colleagues for holding today's hearing on the U.S.-EURATOM Agreement. Undoubtedly, this constructive undertaking will contribute to a better understanding of this important agreement.

This agreement is instrumental to GE and other U.S. based companies who supply, build, and service the world's nuclear power plant fleet. The pending U.S.-EURATOM Agreement for Cooperation (AfC) is key to extending 35 years of responsible international nuclear trade and maintaining U.S. influence on the implementation of international safeguards.

A year and a half ago, the Center for Strategic & International Studies (CSIS) published a white paper recommending approval of a new U.S.-EURATOM AfC. Their conclusion, summarized below, is still valid today:

1. The U.S. and EURATOM nations share a common interest in limiting the proliferation of weapons of mass destruction. The AfC will serve non-proliferation goals by continuing 35 years of cooperation between the U.S. and EURATOM.

2. Failure to renew will drive Japan and Russia to seek other nuclear trading partners. Japan depends on EURATOM for reprocessing. In the absence of an AfC, they will be forced to look exclusively to non-U.S. sources for nuclear fuel and technology. Agreements to purchase highly enriched uranium (HEU) from Russia, a key non-proliferation strategy, may be jeopardized if the markets for the fuel from the HEU are destabilized by failure to implement the AfC.

3. U.S. credibility as a nuclear trading partner and supplier depends on the AfC.

4. The proposed AfC meets requirement of the Nuclear Non-Proliferation Act (NNPA). Programmatic approval is a workable and effective method of monitoring the flow of nuclear material through the fuel cycle as the AfC with Japan demonstrates.

5. Wise U.S. policy rests on the twin pillars of increasing pressure for non-proliferation AND increasing open trade and technology for nations that abide by international safeguards. AfC keeps the U.S. in the nuclear trade so we can maximize our influence and ability to control proliferation.

6. EU fuel cycle decisions are beyond U.S. control. The U.S. has nothing close to a monopoly over any aspect of the nuclear fuel cycle. The rest of the world has caught up with us; European and Japanese companies have the technology and facilities to supply global nuclear markets. If there is

> no U.S.-EURATOM AfC, there will be less USA nuclear trade and less ability to influence fuel cycle decisions outside the U.S.

GE fully supports approval of the AfC for all the reasons put forth by the CSIS, but there are other important benefits worth noting that will come from expanding peaceful nuclear trade with Europe. Nuclear energy is a capital intensive, technology intensive, global business. Only a few of the world's strongest and most technologically sophisticated companies successfully compete in this market. Nuclear energy is an important business to GE, but it has never been, nor will it ever be, merely a business.

We are committed to fulfillment of U.S. and International Atomic Energy Agency (IAEA) nuclear non-proliferation policies. Not only does our government expect it, but so do our customers, shareholders, employees, and suppliers. Thousands of people have a stake in GE's continued success in the nuclear industry. We think GE's continuing involvement in nuclear trade with EURATOM nations, subject to the AfC, is the best way to advance the CSIS-identified U.S. policy objectives and our own business objectives.

These goals are best served by keeping European nuclear markets open to U.S. companies. If the AfC is not approved, GE and other U.S. companies could be excluded from the European markets. This would have adverse impacts on our European Union (EU) customers, and for our worldwide customers as well. U.S. leadership will be lost as European customers are forced to obtain nuclear products and services from non-U.S.

competitors who will gain technical insights from U.S., Asian, and European customers. Vigorous competition from companies operating from a secure European base could very well drive U.S. companies out of the nuclear business, making U.S. nuclear generators dependent on foreign nuclear fuel and service suppliers.

European customers want U.S. companies serving the European market. The U.S. government, universities, and companies have invested billions of dollars to develop peaceful nuclear energy. This investment has given the U.S. a leadership position in global markets for nuclear energy. GE currently has a small, but growing share of the EU nuclear market. European customers appreciate GE technology, workmanship, and dependability. These customers, however, are no longer dependent on U.S. technology. The European nuclear market is mature. At some point, it becomes easier for them to rely on non-U.S. suppliers, just to avoid what they perceive as overlapping and sometimes conflicting special rules from the U.S. Failing to approve the U.S.-EURATOM AfC would be a crippling blow to not only U.S. participation in European markets, but to our global leadership in nuclear technology as well. Worse, it is not only our leadership that may be at stake. There is currently excess capacity among suppliers to the nuclear power industry. A shake-out is likely, and if the AfC is not approved, it is more likely that the U.S.-based suppliers and their employees will suffer.

These concerns are not merely hypothetical. GE Nuclear Energy is a billion dollar global business with over 3000 employees in the U.S.: over 1300 in North Carolina, over 1200

in California, nearly 300 in Ohio, over 100 in Pennsylvania, and over 50 in Illinois. These U.S. jobs exist not merely to serve U.S. power plants, but for the world market. GE Nuclear Energy is truly a global business. We have affiliates in Canada, Japan and Spain. About 50% of our sales are for export from the U.S. and annual sales in Europe are approximately $60 million. These sales earn valuable foreign exchange to help the U.S. balance of payments, and protect thousand of jobs for our employees and our suppliers' employees. GE is the world leader in Boiling Water Reactor (BWR) technology primarily because we are active in Europe and Asia as well as here at home. For 40 years the U.S. government has invested in and supported peaceful use of nuclear energy and encouraged others to do so as well. GE's investment in nuclear technology and facilities is worth over $2.4 billion, and should be considered a national asset that makes nuclear generators all over the world seek us out as their preferred supplier.

These investments, this technology, and most of all, our employees at GE Nuclear Energy are dependent on the trade opportunities that U.S.-EURATOM AfC will create. The owners of the 100+ U.S. nuclear power plants and their millions of customers who depend on this reliable, environmentally compatible, low-operating cost source of energy benefit from this international trade as well. GE can succeed in this business and we look forward to doing so as a responsible U.S. based company that is actively engaged in promoting the peaceful and safe use of nuclear energy.

Thank you.

NAC INTERNATIONAL

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Edward M. Davis
President & CEO

March 11, 1996

The Honorable Ted Stevens
Chairman
Committee on Governmental Affairs
United States Senate
Washington, DC 20510

Dear Mr. Chairman:

During the February 28, 1996, hearing on the US-Euratom Agreement, the General Accounting Office (GAO) raised concerns on the operational status of the Nuclear Materials Management and Safeguards System (NMMSS) which is managed by NAC International for the Department of Energy. Unfortunately, GAO's testimony was based upon data which is no longer timely or correct and may have left the Committee with an inaccurate impression concerning DOE's ability to account for U.S.-controlled nuclear materials.

Since the official transition date of September 1, 1995, NMMSS has been fully operational and has performed at 100 percent availability. During this time, there have been no instances of data loss, data corruption, or reduced system integrity. The Committee can be assured that all U.S.-controlled nuclear material is fully accounted for in NMMSS. In addition, NMMSS functions under full software configuration management, and the documentation previously recommended by the GAO has been written, approved, and placed into effect.

A brief executive summary of NMMSS operations as of March 1, 1996, is attached for the Committee's review. We would be pleased to answer any questions that you or your staff may have regarding the attached information.

Sincerely,

Edward M. Davis

/paa

cc: The Honorable John Glenn
Ranking Minority Member

EMD96056.DOC

Nuclear Materials Management and Safeguards System (NMMSS)
Operational Status

March 1, 1996

Executive Summary

- The replacement NMMSS has operated successfully with **100% availability** during its initial six months of operation. There have been **no incidences of data loss, reduced system integrity, data corruption or database deadlock.**

- The system has operated under software configuration management since April 1995. **Full configuration management has been implemented and is in place.**

- **NMMSS is closing monthly activities on the prescribed schedule.** NMMSS staff is in daily communication with the user community: receiving and inputting data, verifying reported information and discussing proposed system enhancements and upgrades to facilitate improved information flow and retrieval.

- A fully operational back-up NMMSS site has been established at the Lawrence Livermore National Laboratory (LLNL). **The back-up site was tested by NMMSS personnel in September 1995 and is fully functional.** Use of this capability has not been required.

- **All 197 production NMMSS reports are coded.** One-hundred-eighty-eight reports are operational and the remaining nine are in final testing and will be completed in March.

- During 1995, under the oversight of LLNL management, NAC developed detailed system level tests designed to demonstrate that the replacement NMMSS could perform its intended functions. **Thirty-one critical tests were executed successfully in August 1995.** Six tests of a less significant nature will be completed in March 1996.

- In 1995 DOE established a **senior management oversight committee** composed of the major NMMSS sponsors and stakeholders. The group provides DOE with guidance regarding NMMSS priorities and quality control.

- Several NMMSS user surveys have either been issued or will be issued in the coming months to identify user concerns and opportunities for program improvements.

- The **NMMSS Steering Committee** has been appointed by DOE and meets semi-annually to direct the overall technical implementation of NMMSS.

NMMSS Operational Status as of March 1, 1996

NAC International has operated the Nuclear Materials Management and Safeguards System (NMMSS) as the official Department of Energy system-of-record since September 1, 1995. Much progress has occurred during the first six months of operation. This document has been prepared to provide information to interested parties regarding the status of operations and remaining transition issues as of March 1, 1996.

What is the present status of NMMSS operations?

Highlights of the present status follow. Additional details can be found in the questions and answers below:

- There have been no instances of data loss, data corruption, or deadlock.
- The new system has operated at 100% availability since the start of operations in September.
- The system is under full software configuration management, as specified in the project Configuration Management Plan.
- With the exception of a slight delay in the first monthly close-out, subsequent months have been closed on schedule, and all with no data problems at issue.
- The backup site at LLNL is operational and has been tested by NMMSS personnel, but its use has not been required.
- All category "A" production reports are coded and 96% have been completely tested and delivered to NMMSS users. The remaining 4% will be completed and delivered in March.

What has been done to assure there will not be a system loss or corruption of data in the NMMSS?

The design of the replacement NMMSS has several features that ensure system integrity:

- The hardware is physically protected in a limited-access, vault-type room, with a fire-proof safe used for protection of backup data tapes.
- There is full backup of the entire system on a weekly basis, with daily backups of changes. A duplicate of this weekly tape containing the entire historical database and all programs is sent to the backup site at LLNL each week.
- The software development activities are performed on a PC-server that is separate from the production system and all development and testing is performed on this separate server. Programmers do not have access to the production system for development activities.
- Software utility programs have been written and put under configuration management to insure that data and file corruption will not occur.

- The development server is an exact duplicate of the production server and can be used as its replacement if there are problems with the production system.
- Procedures are in place to address and recover from any potential software, hardware, or operating system failures.
- Other system procedures detail the daily recording of reliability, availability and maintainability data for the system to ensure that mean-time-between-failure and mean-time-to-repair system requirements are met on a continual basis.
- The NMMSS is operated and maintained by a dedicated staff of trained professionals and there is no external direct access to the system or the data by others.
- There is an audit trail and transaction tracking of all data and file interactions in order to allow troubleshooting and recovery should an unexpected problem arise.
- A record is maintained of all data received and reports transmitted.

What audits has the new system been subjected to?

NAC is committed to the highest level of quality standards. In this area, in September 1995, the Department directed two separate, independent reviews of the replacement NMMSS. The results of these independent reviews found that the system was capable of performing its intended mission and that there was nothing that should impede the operational use of the replacement system. The replacement system was developed under a process which included two formal software audits. These audits, the Physical Configuration Audit and the Functional Configuration Audit, were conducted by NAC's Quality Assurance manager.

What is the status of the Physical Configuration Audit and the Functional Configuration Audit conducted in August 1995?

All issues from these audits have been satisfactorily dispositioned.

What type of Quality Assurance is in place in the current NMMSS operation?

The project operates under a software quality assurance plan approved by LLNL. This plan provides for independent oversight by a fully trained, "Q" cleared quality assurance manager. Independent audits of procedures, operations and software configuration management are performed on a periodic basis.

What has been the operating experience at NAC during the initial six months of operation?

NAC's NMMSS staff closed the month of September 1995 on November 22, about two weeks behind the time typically experienced for an end-of-year close-out under the previous operator. Since that first close-out, however, NAC has improved the closure rate to the point where the monthly close-out is now occurring on a schedule consistent with previous experience and expectations.

What is the status of programming for the NMMSS reports?

There are about 360 different NMMSS reports. In early 1995, NMMSS reports were divided into two categories: "A" (the higher priority) which represented those reports for which there are identified recipients and which are produced on a specified schedule (with the exception of some semi-annual and annual reports which were specifically placed on the lower priority list), and "B" (the lower priority) which represented the few remaining semi-annual and annual reports and those for which there are no identified recipients but which could potentially be requested. There are a total of 197 "A" reports and 164 "B" reports.

On September 1, 1995, there were 104 category "A" reports operational with programming and testing remaining on 93 "A" reports. As of March 1, 1996, programming has been completed on all 197 "A" reports, 188 are operational, and the remaining 9 are in final testing. Testing on these 9 reports is expected to be completed in March with delivery of these to users also in March.

Ten category "B" reports were operational on September 1, 1995. Less than ten "B" reports have been requested during the first six months of operation so they have been given a lower priority than ad hoc requests. When the testing is completed on the remaining 9 "A" reports and they are operational, work will begin on those "B" reports which have been requested. Most of the remaining "B" reports include a large number that were developed many years ago and current demand for them is nonexistent or very sporadic. NAC is planning to conduct a report survey of NMMSS users in March to determine the priority that should be placed on completing the "B" reports that have no demand prior to completion of other, more important operational activities.

What is the status of U.S. reporting to the IAEA?

All of the reports in question have been completed, tested, reviewed by the system sponsors and forwarded to the IAEA.

What is the status of placing the replacement NMMSS under formal configuration management?

The NMMSS is now under full configuration management. NAC initially placed the replacement software under configuration management in April 1995. After two months of experience prior to the September 1 transition date, it was apparent that operating practices should be improved. These improvements were made in July 1995 and operating practices have since been strengthened again. Since August 1995, NAC has initiated 222 software change requests under its configuration management program. These changes are reviewed, discussed, assigned to a programmer, programmed and tested in the development system (this is a duplicate of the production database).

Analysts then perform the series of acceptance test cases which exercise the system to verify that the changes will not adversely affect the production system, and then when all testing is successful, the changes are added to the production system. As a precaution to unintended changes to the production database, programmers do not have dual access to the production system. Their development work is performed only on the development system, tested there, and only then placed onto the production system by a third party.

Can the system respond to ad hoc requests?

Requests are received from a range of users and others who need nuclear materials data for government projects. The most common requests are received from US nuclear facilities and concern their own material inventories. The system is well-suited for handling requests that require a quick response. The previous system required overnight processing or hours of daytime processing for these requests. The replacement system can and does process the same kind of request in minutes.

From its inception as the system of record in September, the system has responded to ad hoc requests. During the initial six month period, 52 special ad hoc requests have been successfully completed. Approximately 14 requests are presently awaiting disposition. This backlog is higher than expected because NMMSS programming resources have been focused on the completion of NMMSS reports, however we expect these requests to be completed in March.

How are the users' concerns being addressed in the operation of the replacement system?

The NMMSS staff is in daily communication with the NMMSS user community. User concerns that have been addressed vary from handling individual data elements to on-site training and complete user support in providing special reports and responses to ad-hoc requests. Secondly, NAC hosted the 1995 User Meeting as a forum for discussing NMMSS issues and concerns and is planning the second meeting later in 1996. NAC further plans to conduct training classes for NMMSS users in May and August of this year.

The new NMMSS Steering Committee, responsible for directing the overall technical implementation of NMMSS, has been appointed and meets semi-annually. The most recent Steering Committee meeting was held in conjunction with the November 1995 User Meeting. The users are, in most cases, actively involved with the NMMSS, being recipients of NMMSS reports and ad-hoc responses.

Finally, the replacement system was designed to be flexible so that program and operational changes, which address long-standing system concerns, could be made quickly, easily, and at low cost. In the future there will be user surveys by NMMSS to solicit feedback and provide additional means to address user issues. The NMMSS staff is always available to be contacted and responds to specific concerns as they arise.

Most recently, operational changes were made at the request of the U.S. Enrichment Corporation (one of the three NMMSS sponsors - the other two being DOE and NRC) to revise material owner codes so that USEC material could be properly represented by the NMMSS. This example demonstrates the flexibility of the NMMSS to respond to changing user requirements at no additional cost.

What role will NMMSS play in the Euratom agreement?

A U.S. government interagency working group has been formed for the purpose of defining how the reporting will be conducted. The NMMSS will be the source of those reports. The working group is evaluating alternative designs for the reports. After Congressional approval the reporting will begin when the Department and the NRC have issued the reporting instructions to the facilities that have transactions with Euratom countries. The facilities will submit data to NMMSS and NMMSS will prepare the reports and forward them to the Department for transmittal to Euratom. The reports will assist DOE in assuring that the material is used for peaceful purposes.

What role will NMMSS play in the U.S./Russian transparency agreement?

A U.S. government working group (including participation from the NMMSS staff and similar to the working group on the U.S.-Euratom agreement) is presently designing reporting formats that will be used by the NMMSS in generating reports that will be forwarded by the U.S. to Russia.

What is the cost for the replacement NMMSS?

In 1992 the annual cost for NMMSS operation by the previous contractor was approximately $4.5 million, with projections at that time for annual costs on the average of approximately $7.0 million per year from FY93 through FY96. The Department decided in 1993 to replace the then-existing mainframe-based system with a PC-based system which reduced projected annual costs by about half. The replacement NMMSS projects subcontractor costs of $2.6 million in FY96, $2.7 million in FY97, and $2.8 million in FY98 for the same scope of services.

What was the subcontractor cost for development of the replacement NMMSS?

NAC development costs for the replacement NMMSS were $4.5 million over a nineteen-month period ending in August 1995.

Is there any kind of staff improvement/training program in place?

NAC has a formal training program in place that includes regular training on NMMSS operations, maintenance and NMMSS report generation. Additionally, NAC NMMSS staff participate in on-going programs to enhance their knowledge of state-of-the-art database management techniques.

What is the status of a completed, documented design description for the replacement NMMSS?

A formal design document did not exist for the previous system. However, documentation describing the NMMSS database design requirements and the system functional specifications did exist and has been transferred to NAC. During development, NAC used these documents and the limited documentation that was imbedded in the original NMMSS COBOL code as the design basis for the replacement system. NAC has developed, in addition to the legacy functional specifications, data flow diagrams describing the overall architecture of the PC-based system. A top-level software design description was also developed with the assistance of the LLNL Technical Advisory Committee. NAC is in the process of expanding this top-level description into a more detailed design document which will be maintained for the life of the system.

The design description is an extremely important, "living" document. It allows more in-depth technical review of the system by others and aids new personnel in understanding the developed system to adequately design future upgrades. NAC agreed with LLNL that Rev. 0 of this document would be an "as-built" description of the software and hardware configuration. An initial draft of this document was prepared in August 1994. Progress in finalizing this document has been minimal due to the efforts devoted to programming the category "A" NMMSS reports. However, work has resumed on this document. It is anticipated that this will be a sizable document and NAC is expecting the draft to be completed in August 1996 and submitted to LLNL for review at that time.

How much downtime has the replacement NMMSS experienced?

The replacement NMMSS has not experienced any unscheduled downtime in the initial six months of operation.

Is the system governed by definitive operating procedures?

A comprehensive set of operating and system procedures has been developed and is in use. The entire set of procedures governs the system operation and staff members whose work is covered by the procedures receive initial and periodic training in their use.

What is the current status of acceptance testing?

During 1995, under the oversight of the LLNL Technical Advisory Committee (TAC), NAC developed a series of 37 system level tests which were designed to demonstrate that the replacement NMMSS could perform its intended function. Thirty-three of these tests were executed in August 1995, and LLNL management reported to DOE in September that of the 33 executed test cases, 31 were deemed to have been successfully completed

(although certain follow up actions were necessary), two were being evaluated, and four tests remain to be completed.

What is the status of the remaining four tests which have not been performed?

The technical approach to the remaining four tests has been agreed to with LLNL. Two of the four test procedures have been drafted and forwarded to LLNL for review and the remaining two will be drafted during the first half of March. The drafts of these two tests will be sent to LLNL for review by the TAC before March 15. A brief understanding of the nature of these tests would aid the reader in understanding the significance of these tests on NMMSS operations:

Test Case 801 - This test is designed to satisfy the requirement that the replacement NMMSS be both a safeguards and a materials management system. Basically, this test is satisfied when all of the other tests are completed. It demonstrates that the replacement system could be expanded to meet the requirements now performed by DOE materials management and safeguards programs.

Test Case 802 - This test is designed to demonstrate that the replacement NMMSS has the flexibility to allow reasonable enhancements to be made. To pass this test, NAC must describe the anticipated level of effort to change the 80-column data input format specified by DOE/NRC forms into a "free" data input field.

Test Case 855 - This test is designed to demonstrate that the replacement NMMSS can produce the International reports which are sent to the IAEA. These reports have now been completed, approved by DOE and NRC, and sent to the IAEA. This will now allow the test case to be finalized, rehearsed and executed.

Test Case 856 - This test is designed to demonstrate that the replacement system can produce other reports including the data output to the Energy Information Administration of DOE.

What about the follow up actions on the 31 executed tests?

Fourteen of the 31 tests required follow up actions which fell into one of three general areas:

- LLNL approval for requirement waivers and deviations (for example, due to issues or events making the requirement no longer valid) - this has been formally submitted to LLNL for approval.
- NAC preparation and approval of operating procedures, some of which strengthen implementation of system requirements - these have been completed, internally approved, and forwarded to LLNL.
- Certification of certain configuration management actions - these actions have been taken and this will be certified to LLNL in early March.

When will testing be completed?

The remaining four test cases will be rehearsed by NAC in March. The LLNL TAC will witness their execution at the end of March 1996.

Will the complete set of system tests be reaccomplished?

The system test cases are used on an on-going basis to evaluate and verify each approved modification or software upgrade to the NMMSS. Each of the requirements based test cases will be used as necessary to validate new improvements and modifications to the NMMSS. Since the September 1 transition date, the dynamic system tests which exercise the software have been successfully repeated five times as part of the configuration management process.

What actions have been taken to assure consistency in the NMMSS databases between the previous system and the replacement system?

Several actions have been taken to assure consistency. During NMMSS transition, the entire NMMSS database was transferred with the program. This provided NAC with the opportunity to verify files and file formats as well as data. Also during transition, the two companies operated their databases in synchronization, processing the same data and comparing the resultant daily output over a nine month period. Detailed data comparisons for both transaction and inventory data were performed monthly during this process to ensure consistency of data and processing operations.

PREPARED STATEMENT OF JACK EDLOW, PRESIDENT, EDLOW INTERNATIONAL COMPANY

We thank the Committee for this opportunity to provide our comments on the proposed U.S./EURATOM Agreement for Peaceful Nuclear cooperation.With more than 38 years of experience, Edlow International Company provides expert transportation management services to more than 100 clients in 50 countries on six continents. These services span the full spectrum of the fuel cycle—from concentrates, enriched product and fuel assemblies to spent fuel and plutonium. Responsibility for ensuring compliance with the export controls implemented by the U.S. Departments of Commerce, Energy, State and Treasury, and the Nuclear Regulatory Commission, as well as foreign governments, is associated with the physical movement of such commodities.

As a transporter of radioactive materials, EIC is part of a critical partnership between government and industry in ensuring that nuclear materials and components are safely moved and are transferred only between approved users for authorized uses. While we do not develop non-proliferation policy, we—and our colleagues in the commercial nuclear power industry—play an important role in executing the mechanisms developed to implement and support such policy.

The nuclear power industry has managed this responsibility well. to continue this success, however, it is important that the framework in which we operate remain stable and predictable. foundation accords such as the Nuclear Non-Proliferation Treaty and the Nuclear Suppliers Group are preeminent, but no less important are the bilateral agreements under which peaceful cooperation is carried out between the U.S. and its allies around the world.

The proposed U.S./EURATOM Cooperation Agreement is a significant part of this structure. The U.S.-European relationship serves as a testament to the ability of governments and industry to successfully manage peaceful nuclear trade while simultaneously furthering international cooperation on preventing the proliferation of nuclear weapons or unauthorized access to radioactive materials by sub-national groups.

The U.S./EURATOM Agreement is pivotal to the success of the following goals:

- Allowing the U.S. to retain its role as an international leader in the nuclear energy field by demonstrating its commitment to customers in Europe, as well as in other important regions such as the pacific Rim. The jobs and revenue generated by such commercial and peaceful trade are critical to companies such as ours.
- Promoting the Reduced Enrichment for Research and Test Reactors (RERTR) program, which encourages reactor operators to convert to low enriched fuel, and promoting the return of spent research reactor fuel from these facilities under the Department of Energy's recently announced initiative.
- Continuing to provide a platform for American leadership in important international non-proliferation programs, such as negotiations to conclude a Comprehensive Test Ban Treaty and measures designed to further strengthen controls on sensitive nuclear technologies and materials.
- Ensuring U.S. access to the expertise of European companies and organizations in the use of technologies which may be critical to U.S. efforts to dispose of excess fissile materials in a safe and secure manner.
- Providing a relationship through which the U.S. retains consent rights over U.S.-origin materials in Europe.
- Serving as a model of cooperation for U.S. relationships with other regions and countries.

These are examples of just some of the advantages of the continuing U.S./EURATOM relationship. These benefits—coupled with the fact that those Federal agencies responsible for developing and implementing U.S. non-proliferation policy have confirmed that the proposed U.S./EURATOM Agreement fully complies with U.S. law—represent a win-win situation for U.S. Government and industry.

While isolationist policies are currently in vogue among some sectors, it has never been the policy nor the desire of the United States to segregate itself from other countries on non-proliferation issues. Successful implementation of the U.S./EURATOM Agreement will ensure continued American involvement and leadership in efforts to halt the spread of weapons of mass destruction.

Thank you again for this opportunity to comment.

LETTER FROM J. BENNETT JOHNSTON, U.S. SENATOR FROM LOUISIANA

U.S. SENATE,
February 26, 1996

Senator Stevens
U.S. Senate

DEAR TED, I would appreciate it if you would allow the attached statement to be considered as part of your hearing on the EURATOM Treaty.

I strongly support that treaty, without conditions.

Thanks.

J. BENNETT JOHNSTON

PREPARED STATEMENT OF J. BENNETT JOHNSTON, SENATOR FROM LOUISIANA

More than 40 years ago, President Eisenhower committed this nation to sharing our nuclear technology in the cause of peace. Since then, it has been the policy of this government, under Republican Presidents and Democratic Presidents alike, to make available our nuclear materials, our know-how, and our technology to any nation that renounces nuclear weapons and agrees to certain safeguards. This policy has been the bedrock upon which all of our efforts to halt the spread of nuclear weapons has been built.

Euratom, the European Union's nuclear trading arm, is one of our oldest, most important, and most reliable partners in this venture. Its members include many of our oldest and closest allies. Presidents Carter, Reagan, Bush, and Clinton have each attested that our relationship with Euratom is essential to our nonproliferation goals and our national security.

By its terms, our old agreement with Euratom expired at the end of last year. The Clinton Administration, building on work started by the Bush Administration, has negotiated a new and stronger agreement. Unless Congress blocks it, the new agreement will go into effect in the next few weeks. The new agreement is good for U.S. trade and for U.S. nonproliferation policy. It deserves our wholehearted support.

Predictably, though, the professional anti-nuclear zealots.have embarked on a campaign of distortion and disinformation designed to defeat the new agreement. This committee should not be misled by their false counsel.

The opponents claim that the agreement violates U.S. law. It does not. It meets all the requirements of the Atomic Energy Act and the Nuclear Non-Proliferation Act. It imposes new controls that go beyond what is required by law and beyond those in the old agreement.

Opponents say the agreement's advance, long-term programmatic approvals are inadequate. In fact, these controls have been successfully used before in nonproliferation agreements with Japan, Sweden, Norway, and Finland. The Senate reviewed and accepted each of these agreements and no problem has arisen from them.

Opponents claim the agreement will not allow the United States to block other nations' efforts to reprocess their spent nuclear fuel and bum recycled plutonium in their reactors. In fact, many Euratom countries are doing so already—as is their right. The United States has no right to stop them. This agreement will give us a greater say in their fuel cycle activities than we now possess. It will enhance our influence.

Opponents claim that the Euratom members do not share our nonproliferation goals. In fact, these countries have, in the President's words, "impeccable nuclear nonproliferation credentials," and are "of one mind" with us "in their unswerving commitment to achieving global nuclear nonproliferation goals."

Finally, opponents say the agreement poses a threat to U.S. national security. This claim is patently absurd. As the President has said, this agreement "will make an important contribution to achieving our nonproliferation, trade, and other significant foreign policy goals." It "will strengthen the international nuclear nonproliferation regime," and promote our security.

Whether they mean to or not, the opponents of this agreement are espousing the jingoistic trade policies of Buchananism. They are advocating that we divorce ourselves from the family of nations, withhold our commerce, and hurl invective at our former friends and allies from behind our trade barriers. Such an approach ignores reality and defies common sense. It will not affect Europe's nuclear program. It will only diminish our influence and hurt American workers.

The Euratom agreement opens the door to more than $4 billion in nuclear trade to U.S. businesses. It will directly affect the livelihood of 5,000 workers in nuclear

fuel plant workers in Ohio and Kentucky. Ironically, failure to implement this agreement will erect a trade barrier against U.S. exports but will not bar foreign imports into this country.

Our nuclear nonproliferation laws are extremely tough. They intrude deeply into the energy programs of our trading partners. The members of Euratom are great and proud nations. Some have more advanced nuclear power programs than our own. Their willingness to agree to the intrusive demands of our laws is commendable. We should recognize this agreement for the remarkable accomplishment that it is.

LETTER FROM SENATOR MURKOWSKI, U.S. SENATOR FROM THE STATE OF ALASKA

U.S. SENATE,
February 27, 1996

Honorable Ted Stevens, *Chairman*
Committee on Governmental Affairs
United States Senate
Washington, DC.

DEAR TED: I know that your Committee is holding a hearing on the U.S./EURATOM Agreement tomorrow, and I would appreciate it if you would consider the attached statement for inclusion in the hearing record.

The U.S./EURATOM Agreement enjoys broad bipartisan support in the Energy Committee. We believe it is critical to U.S. commercial and nonproliferation objectives, and that it should be approved without conditions.

Thank you for your consideration of this matter.

Sincerely,

FRANK H. MURKOWSKI,
Chairman

PREPARED STATEMENT OF SENATOR FRANK H. MURKOWSKI, CHAIRMAN, COMMITTEE ON ENERGY AND NATURAL RESOURCES

Mr. Chairman, the agreement for nuclear cooperation with Europe, also known as the "U.S./EURATOM Agreement," deserves the complete and unequivocal support of Congress.

The U.S./EURATOM Agreement lies at the heart of U.S.-European peaceful nuclear cooperation. For the past 35 years, it has served as the cornerstone of mutually beneficial collaboration and trade in the civilian nuclear field. As such, it has not only been and integral component of our vast commercial relationship with our Atlantic allies, but has helped develop the intellectual wellspring from which our common nonproliferation policy flows.

What would happen if a successor U.S./EURATOM Agreement were allowed to slip through the political cracks? Simply stated, it could constitute a subtle but fi1ndamental erosion of the most vital and historic political, military, and economic coalition of all time—the Atlantic Alliance. It would impede the serious and on-going efforts to redefine NATO in the aftermath of the cold war, and cause division at a time when division is our greatest enemy. The tragedy of the current crisis in Bosnia, and the difficulties in defining and implementing the Partnership for Peace are challenges enough for NATO. what we can least afford now are additional challenges from within.

Failure to renew the EURATOM agreement would also undermine the linchpin of our unified nonproliferation policy. The indefinite extension of the Nuclear Nonproliferation Treaty last year was a hard fought and crucial victory. Failure to renew the EURATOM agreement could call into question the cooperative relationship upon which our nonproliferation policy is founded. The opportunity to prevent such an outcome, however, is at hand. We can build upon our successful effort to indefinitely extend the Nuclear Nonproliferation Treaty by replacing the bipartisan venture and supporting a new AFC.

To be sure, there are differences between the U.S. and Europe over civil nuclear policy that cannot be ignored. EURATOM needs assurances that its long-term nuclear energy program will not be unduly constrained or hindered and the U.S. Congress must be certain that the agreement is in accordance with Nuclear Nonproliferation Act (NNPA) of 1978. But these, and this can not be emphasized enough, are legitimate concerns over form not substance.

More importantly, the new AFC provides a mechanism to resolve these differences in the proven concept of long-term programmatic approvals. Implementation of such an approach would satisfy the consent rights article of the NNPA, and provide Europe with the requisite assurance that the U.S. will not arbitrarily or capriciously thwart their nuclear programs. President Clinton and Secretary of State Christopher have. already voiced their support for such an approach, and we are convinced that an understanding of this nature would work particularly well with regard to our allies in Europe.

what must be avoided at all cost, however, is allowing the Congressional review process to be side tracked by matters already agreed upon by parties. This not only surrenders the political initiative to those who seek to sabotage the agreement, but flies in the face of decades of U.S.-European political, military, and economic cooperation. Now the substantive differences have been settled, disagreements over style—regardless of their complexity—can be resolved by allies working together in good faith and in pursuit of a common and honorable goal.

Congress must close ranks and not surrender the momentum to the small but vocal minority in the U.S. who are opposed to all things nuclear, and who would prefer to see the U.S./EURATOM Agreement collapse. Using tactics of delay and obfuscation, they will do all in their power to prevent a successor agreement from being realized. In Washington, they will seek to turn a bipartisan issue into one characterized by political rancor and scientific half-truths; in both the U.S. and Europe they will strive to dictate policy by preventing forthright and honest discussion of the issues at hand.

Over the course of its nearly half century of existence, the Atlantic Alliance has weathered many storms: it has bowed but never broken. Forged by the bonds of mutual respect, common interests, and long-term security, equitable accommodation has always been reached because preservation of the whole was recognized to be the foundation for the fi1ture. Finalizing a new U.S./EURATOM Agreement for Peaceful Nuclear Cooperation should not be allowed to shake that foundation and deviate from that uniquely successful history.

LETTER FROM ANDREW T. HYMAN

SANDY HOOK ROAD
KNOXVILLE, MARYLAND
February 21, 1996

Committee on Governmental Affairs
United State Senate
WashIngton D.C.

To the Committee on Governmental Affairs: I am writing with regard to the EURATOM pact which the Committee will be addressing on February 28. This EURATOM accord has a serious constitutional problem, which is described in a recent law review article of mine.[1] Although labeled an "agreement," this pact falls squarely within the definition of the word "treaty" in the Constitution; therefore it requires the implied or express consent of two-thirds of the Senate in addition to statutory requirements. The President seems to feel that a nuclear cooperation pact is not a treaty regardless of its extent and duration, but the Constitution says otherwise. Senator Stevens has ably observed that:

> Although the President has some discretion to choose the instrument that he will use to enter into an international agreement, he must respect the confines of the instrument he chooses. I believe the Constitution refers to treaties, to compacts, and to agreements as some of the choices the President has. But, I believe that there are some parameters on any President in choosing the instrument that he is going to use for international accords.[2]

Unlike recent accords like NAFTA, which say the U.S. can end our obligations upon six months' notice, the terms of this EURATOM accord say that they are ordinarily irrevocable for thirty years. In other words, the U.S. would be violating this

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[1] The Unconstitutionality of Long-Term Nuclear Pacts that are Rejected by Over One-Third of the Senate," *Denver Journal of International Law and Policy,*. Volume 23, Number 2, Spring 1995.

[2] 139 Cong. Rec. 16352 (1993). These wise words of Senator Stevens are also quoted on page 320 of my article "The Unconstitutionality of Long-Term Nuclear Pacts that are Rejected by Over One-Third of the Senate," *Denver Journal of International Law and Policy,* Volume 23, Number 2, Spring 1995.

EURATOM commitment if, at any time during the next three decades, Congress restricts exports envisaged by the accord.[3] This pact would thus oblige future Presidents and Congresses to help prospective EURATOM nations to reprocess tons of weapons-usable plutonium (a priceless item on the black market), even if civilian reprocessing continues to be taboo within our own shores, and even if EURATOM admits member nations which are not parties to the Nuclear Nonproliferation Treaty.[4]

The EURATOM pact would surpass anything ever accomplished by a nuclear cooperation agreement, including the 1988 Japan pact. Unlike the Japan pact, this EURATOM accord omits a vital clause that subjects cooperation to applicable laws.[5] In 1985, the State Department explained that this subject-to-laws-clause "ensures the availability of the necessary flexibility for the United States in the future" regarding "the decision by the United States whether to permit the export of material, facilities, or components," and thus the Department has contended that this clause-now omitted-ensures that "United States flexibility for the future is fully protected."[6]

The treaty clause of the Constitution is directed at, *inter alia,* pacts which restrict flexibility and thus pose a risk of entanglement. As Justice Sutherland said, "International agreements which are not treaties in the full constitutional sense are perhaps confined to . . . those which are of . . . limited scope and duration, as distinguished from those of general consequence and permanent character."[7] I urge you to insist that this EURATOM treaty not be implemented if it is rejected by over one-third of the Senate.

Sincerely,

ANDREW T. HYMAN

[3] See page 132 of H.R. Doc. No. 104-138,104th Congress, 1st Session. See also Art. IV of the EURATOM accord (on page 13 of H.R. Doc. 104-138), stating that export authorizations, licenses, and consents "shall not be used to restrict trade."

[4] See page 93 of H.R. Doc. No. 104-138, 104th Congress, 1st Session. Both France and Spain have been EURATOM members while refusing to sign the NPT.

[5] *Id.* at 131.

[6] "Legal Memorandum Prepared by the Department of State on Article 2(1) of the Agreement for Cooperation Between the United States and the People's Republic of China Concerning Peaceful Uses of Nuclear Energy" (1985).

[7] See footnote 87 of "The Unconstitutionality of Long-Term Nuclear Pacts that are Rejected by Over One-Third of the Senate," *Denver Journal of International Law and Policy,* Volume 23, Number 2, Spring 1995.

Questions and Responses from the Arms Control & Disarmament Agency

Europe's NP Credentials:

ACDA Refers to Europe's "exemplary" and "strong" nonproliferation credentials:

1. Is this record exemplary with respect to supplies of nuclear, dual-use, and missile-related goods to the Middle East and South Asia, or the level of control exercised by European governments throughout the European Union over such supplies? Is it fair to consider such activities in evaluating a country's nonproliferation credentials?

Response: Yes and yes. It should be noted that an assessment of any country's nonproliferation credentials would consider a wide range of factors, only one of which is export control policies. Before discussing export controls, mention needs to be made of the fact that all Euratom members are party to the NPT, the Zangger (NPT Exporters) Committee, and the Nuclear Suppliers Group. There is nothing to suggest that any member is less than fully committed to nonproliferation. All supported indefinite extension of the NPT. It is true that the United States and Euratom members have not always agreed on the full range of nuclear export policies. Even among such close friends and allies, there will not always be an exact commonality of views. However, we are not aware of any significant nuclear transfers, i.e. trigger list items, from Euratom countries to the Middle East or South Asia for many years. Moreover, our respective policies have converged significantly since 1991-92 as the Nuclear Suppliers Group (which includes all Euratom members) has significantly strengthened its efforts by inter alia adopting full-scope IAEA safeguards as a condition of nuclear supply to non-nuclear-weapon states and establishing controls on nuclear dual-use items. The members of Euratom have also recently adopted a "catch-all" control which enhances the authority of the governments to halt transfers of items not found on nuclear control lists.

2. Has ACDA participated in or originated any diplomatic demarches in recent years concerning such supplies from Euratom members? Can you provide a general estimate of how many such demarches have been presented just in the last calendar year?

Response: Yes. We estimate that approximately 25 demarches were presented in 1995 to Euratom member states on individual procurement attempts relevant to nuclear-related goods. Of course, it should not be assumed that these demarches resulted from any differences between the United States and Euratom members on particular cases. The demarches largely represent information sharing and efforts to alert a number of suppliers of future procurement attempts about which we have received information. In addition to demarches on individual procurement cases, the United States continues to urge our European friends to adopt the same stringent controls on exports to Iran which the United States has adopted. While Euratom members do not provide assistance to Iran's nuclear program, their approach is not quite as strict as the United States' which has placed an embargo on all licensable goods for Iran.

3. Why did ACDA's Nuclear Proliferation Assessment Statement (NPAS) omit all discussion of --or even an acknowledgment of --European proliferation-related activities?

Response: In view of the statutory mandate in Section 123 of the Atomic Energy Act, all NPAS's concluded since enactment of the 1978 Nuclear Non-Proliferation Act have focussed largely on the provisions of the agreement itself. However, the NPAS's have addressed other factors since the risk of diversion cannot be adequately assessed without also reviewing the nuclear nonproliferation credentials of the cooperating partner, e.g. primarily the security situation, motivations which may exist toward acquiring nuclear weapons, and the record of the country in question in honoring its bilateral and international nuclear nonproliferation obligations. One aspect of that analysis is whether the recipient has adopted international nuclear export control standards. We could have acknowledged in the Euratom NPAS the well-documented differences that formerly existed between the United States and some countries in Euratom in this area, but the most relevant fact is that today we share very similar approaches.

4. Did Congress intend such assessments to be performed objectively or merely to constitute statements of policy? Do you believe ACDA's NPAS presented a fair and objective review of the nonproliferation credentials of the members of Euratom?

Response: The statutory mandate for the NPAS clearly requires an independent examination by ACDA of the provisions of the agreement, within the context of the nuclear nonproliferation policies and practices of the cooperating partner. We believe the Euratom NPAS meets that standard. We could have included a more detailed examination of the nuclear nonproliferation credentials of Euratom members, but the essential facts and judgements regarding their acceptance of and commitment to all relevant international norms are cited. The major difference at present between the United States and Euratom members in nuclear nonproliferation relevant to this agreement concerns policies toward commercial reprocessing and plutonium use; this factor is noted in Parts I and III of the NPAS in the context of how it influenced negotiations on the agreement.

5. The NPAS (IV-2) stated that the US "exercised maximum flexibility within its statutory requirements" during the conduct of negotiations with Euratom --To what extent did the Administration base this flexibility on an assessment of Europe's nonproliferation credentials?

Response: The flexibility exhibited by the United States on issues such as perpetuity and retroactivity was due in part to the strong nuclear nonproliferation credentials of Euratom members. But it was also clear that without a willingness to exercise such flexibility, within the limits of our law, we may not have succeeded in concluding a new agreement. The United States believed that concluding a new agreement meeting all statutory requirements would promote important U.S. interests. In general, it was in the political and security interest of the United States to preserve and strengthen the nearly 40 year history of civil nuclear cooperation between the United States and Euratom.

This agreement also serves as an important foundation for continued, close collaboration with Euratom members on the N.P.T. and other nuclear nonproliferation issues of critical importance to the United States; it also will result in a significant expansion of U.S. controls beyond those contained in the recently expired agreement, particularly on plutonium and highly enriched uranium; and it should help to create a favorable environment for further U.S. efforts to limit stockpiles of civil plutonium.

Safeguards:

1. Given (a) ACDA's historic role in making full-scope IAEA safeguards an N.P.T. requirement (over the opposition of the State Department which unsuccessfully sought to include the words "or equivalent" in the original N.P.T. safeguards article), (b) ACDA's record since as an interagency advocate of the universality of IAEA safeguards, and (c) ACDA's long-standing opposition to the notion of "equivalent safeguards" --Why did ACDA in 1987 (with Japan) and again in 1995 (with Euratom) endorse a concept of "equivalent safeguards" as a substitute for IAEA safeguards?

Response: All U.S. agreements for cooperation concluded since enactment of the 1978 NAPA permit the application of fall-back U.S. bilateral safeguards in the remote contingency that IAEA safeguards are no longer being applied. Such bilateral safeguards would be in lieu of, not as a substitute for, IAEA safeguards. The factor of "equivalency" to IAEA safeguards is relevant only to establishing the standard of effectiveness and/or coverage which these fall-back bilateral safeguards must meet. ACDA has always endorsed the concept of backup safeguards of equivalent effectiveness to IAEA safeguards on the grounds that including such provisions in agreements for cooperation affords an additional measure of protection against the misuse of US nuclear supply in the unlikely event that IAEA safeguard would no longer be applied.

2. On what legal authority can nuclear cooperation continue on the basis of "equivalent" safeguards when the Atomic Energy Act specifically requires full-scope "IAEA safeguards"?

Response: The new U.S.-Euratom agreement for cooperation meets all the requirements of Section 123 a. of the Atomic Energy Act, including criterion (2) which specifies that nuclear supply under an agreement for cooperation may continue only if IAEA full-scope safeguards are being maintained in the recipient non-nuclear-weapon state(s). In the highly unlikely event that such IAEA safeguards are not being applied in all non-nuclear-weapon states in Euratom, the legal basis for cooperation specified in the agreement would no longer be met. The new agreement calls for the application of fall-back Euratom or U.S. safeguards in such a contingency. It would also be necessary in that case to determine what additional steps would be required to allow a resumption of cooperation under the agreement.

New Members:

ACDA's NPAS devotes two-paragraphs to the issue of ex-Warsaw Pact states joining Euratom:

1. How could ACDA assess future proliferation risks if it did not know which countries will even be in Euratom?

Response: Our assessment is based on a judgment that the level of commitment to nuclear nonproliferation promulgated throughout the European Union is fully compatible with entering into this agreement for cooperation, and on an awareness that it is Euratom policy to ensure that any new members share the same degree of commitment. Accession to Euratom requires new members to be N.P.T. parties (which includes acceptance of full-scope IAEA safeguards in non-nuclear-weapon states), to accept the Guidelines of the Nuclear Suppliers Group, and to embrace a number of other policies and standards that reflect international norms including on the physical protection of nuclear material.

In addition, by adhering to the Euratom Treaty new members agree to become subject to the Euratom safeguards system which provides an additional layer of confidence that nuclear material is being used only for peaceful purposes. We are informed by the European Commission that the process leading to Euratom accession includes steps to ensure that the prospective new member's domestic legislation in such areas as safeguards and export controls is fully compatible with Euratom standards.

It is by no means certain if and when Euratom will admit new members. We are also unaware of any current plans for establishing reprocessing or plutonium fuel fabrication facilities in these prospective new members. Therefore, the long-term consent arrangements in the new U.S.-Euratom agreement on reprocessing and fuel fabrication would likely have no practical significance in these countries for the foreseeable future. Moreover, it is clear from the 1984 Declaration of Common Policy that Euratom members are fully aware of the proliferation sensitivity associated with intra-Euratom transfers of plutonium or highly enriched uranium. The 1984 Declaration was designed to enhance the transparency of such transfers and also allows for consultations among Euratom members on "the nature and the degree of development of the nuclear program" of any member receiving such nuclear material.

Finally, there is the agreement for cooperation itself which contains all the provisions required by U.S. law and as such is designed to afford adequate protection against any diversion of U.S. nuclear supply.

2. How "exemplary" are the export and nuclear smuggling controls of new potential members?

Response: The countries of Central Europe (Bulgaria, the Czech Republic, Hungary, Poland, Romania and Slovakia) have taken an active role for many years in the establishment and implementation of the international nuclear nonproliferation regime and, in most cases, have extensive nuclear programs of their own. They are members of the Nuclear Suppliers Group and follow the NSG Guidelines with respect to export controls, on both nuclear trigger list and dual-use items, and with respect to physical protection standards on nuclear material. The United States has made physical protection visits to many of these countries in its efforts to promote acceptance of international guidelines on physical protection of nuclear materials and facilities. U.S. delegations have held discussions with national authorities and have visited many foreign nuclear sites in these countries to discuss security systems. We have found them committed to meet international standards. Regardless of the acceptability of their current nuclear export controls, the entry of these countries into Euratom would occur only after meeting the accession requirements set by Euratom as discussed in the previous question. We would envisage that such entry would, at a minimum, further strengthen nuclear material controls in these countries due to the application of the Euratom safeguards system.

3. The NPAS (p.III-12) refers to the possibility that four additional members may join Euratom "in future years." The DoE analysis (p. 76) added Romania and Bulgaria to this list as "less likely candidates." After the SGAC hearing, the State Department submitted a Euratom "Briefing Note" indicating that the Commission is preparing opinions on membership for 10 countries. The International Herald Tribune reported on 3/1/96 that "as many as 12 new members," triple the estimate in the NPAS, may join the European Union in the next decade. Questions: (a) How many members does ACDA now believe will join the Union during the term of this Agreement? (b) Does ACDA believe that near-doubling of the size of Euratom will have any impact whatsoever on the risk of proliferation?

Response: (a) It is not possible to predict with any degree of accuracy the number of countries likely to join Euratom during the minimum 30 year term of the new agreement for cooperation. Whether and when new members join Euratom will depend on a complex web of political, security and economic factors -- in addition to the specifics of negotiations on their accession to Euratom and other European Union institutions. The four countries mentioned in the ACDA NPAS (Hungary, Poland, Czech Republic, and Slovakia) were mentioned only as the "most likely new members in future years."

(b) The rate of growth of Euratom -- including possibly a "near-doubling" of its membership -- is not a major consideration in our judgement of proliferation risk related to the new agreement for cooperation. The key factor is our belief that the European Union, and Euratom in particular, will continue to ensure that its standards for accession include nuclear nonproliferation practices and procedures comparable to those which currently exist.

This reliance on the European Union is based on an objective appraisal of the long history of close collaboration with the countries of Euratom on matters related to peaceful nuclear cooperation and on strengthening the nuclear nonproliferation regime. Their support and leadership in nuclear nonproliferation over the past 40 years has been instrumental in expanding the essential elements of this regime; and this commitment on the part of its members has translated into the establishment by Euratom of rigorous nonproliferation accession standards for new members.

U.S.-EURATOM AGREEMENT

Responses to Questions Submitted to
Terry Lash
U.S. Department of Energy
By Senator John Glenn
Ranking Member
Committee of Governmental Affairs
United States Senate

Plutonium

1. Last year, DOE defined "weapons-usable nuclear materials" to include "plutonium of any isotopic composition" (60F.R.17344) --

(a) Why did DOE define such materials to include all isotopes of plutonium?

RESPONSE

"Weapons-usable nuclear material" is not defined in the Atomic Energy Act. The 60 F.R. 17344 definition was simply a working definition for purposes of the intended EIS. This working definition was later narrowed to exclude Pu-238 from the materials covered by the EIS.

(b) Does DOE back the Agreement's exemption of Pu-238 from safeguards, and if so on what basis can DOE support such an exemption for a material that the Department has declared "may be utilized in making a nuclear explosive or weapon"?

RESPONSE

Yes, on the basis of section 54b. of the Atomic Energy Act.

(c) When U.S. law says "special nuclear material" includes all plutonium, without qualification or exception, and requires safeguards over it all, how can a Side Letter to an Agreement exempt a particular isotope from safeguards?

RESPONSE

The side letter does not create the exemption; it simply reflects the fact that, pursuant to section 54b. of the Atomic Energy Act, the provisions of which are explicitly made "[n]otwithstanding the provisions of sections 123, 124, and 125," Pu-238 in concentrations of 80 percent or more need not be brought within the scope of the

Agreement.

2. On 9/29/94, Under Secretary of Energy Charles Curtis testified that "Internationally . . . the U.S. has put forth the following principles: Balance supply of plutonium with demand for its use in nuclear reactor fuel. Excess supplies of separated plutonium should be avoided and eventually eliminated. Achieve maximum transparency in reprocessing, use, storage, and movement of plutonium"-- How will America apply these principles to EURATOM, specifically:

(a) DOE's Analysis of Consents stated that the use of U.S. plutonium in EURATOM will "follow as a natural and foreseeable result" of this Agreement - how does this effect serve Under Secretary Curtis' principles?

RESPONSE

The quoted phrase describes one of the realities that must be considered as the United States seeks to promote application of of the U.S. Government's principles in EURATOM. It appears in the following context on page 52 of the analysis:

> ***Free movement of nuclear materials among its Member States is one of the fundamental principles of EURATOM. Moreover, the members of EURATOM intend to use plutonium extracted by reprocessing in France and the United Kingdom in MOX reactor fuel for power reactors in non-nuclear weapon Member States of EURATOM. Use of U.S.-obligated plutonium throughout the Member States of EURATOM will therefore follow as a natural and foreseeable result from the advance approval of reprocessing in British and French facilities, as provided for in the Agreement. [Emphasis added.]***

This passage identifies one of the central realities of nuclear commerce within EURATOM. Free movement of nuclear materials among its Member States is required by the Treaty of Rome, the organic document of the EURATOM organization. EURATOM can no more negotiate away this principle than the U.S. government could, in a commercial treaty, agree to discriminate against specific states of the federal union. Free movement of nuclear materials within EURATOM must therefore be taken into account in implementing the policy objectives set forth by Under Secretary Curtis.

The United States and EURATOM have different policies on the civil use of plutonium. After fifteen years of negotiation, it has become clear that neither EURATOM nor the United States will change its civil plutonium policy as part of a new peaceful nuclear cooperation agreement.

The United States will be in a much better position to promote the U.S. Government's principles with the new agreement than without it. The United States intends to discuss with EURATOM and other countries issues related to excess supplies of plutonium both bilaterally and multilaterally. Under the agreement, the United States will be able to raise issues related to excess supplies of plutonium through the Joint Committee and Technical Working Group to be established under Article 12. If the United States and EURATOM were to cut off all peaceful nuclear cooperation, which would have happened if the new agreement never entered into force, then there would be greatly diminished opportunities for the United States to raise issues relating to safeguards and physical protection of plutonium as well as the risks associated with plutonium stockpiling.

(b) Does the Agreement allow the U.S. to suspend or terminate the Agreement in the event of a plutonium surplus in EURATOM? Is there such a surplus in EURATOM today? Do plutonium surpluses not create proliferation risks?

RESPONSE

The agreement may be suspended or terminated only for material violations of its terms, as prescribed in Article 13. A plutonium surplus in EURATOM would not violate any provision of the agreement, and the agreement could not be suspended or terminated on that basis under Article 13.

The United States does have the right to suspend its advance consent to reprocessing of nuclear material and to alteration in form or content of plutonium, uranium 233 and high enriched uranium, if there is objective evidence that further reprocessing or alteration would entail a serious threat to the security of the United States, or a significant increase in the risk of nuclear proliferation. Under paragraph 8.A. of the Agreed Minute, the suspension must be the result of a situation of the same or greater degree of seriousness as the following:

- *a non-nuclear-weapon state member of EURATOM detonates a nuclear explosive device;*

- *a nuclear-weapon state member of EURATOM detonates a nuclear explosive device using any item subject to the agreement;*

- *EURATOM or a member state, as relevant, materially violates, terminates or declares itself not bound by:*

    - *The Nuclear Non-Proliferation Treaty;*

    - *The relevant IAEA and EURATOM Safeguards; or*

- *The Nuclear Suppliers Group guidelines for nuclear transfers;*

- *A EURATOM member state retransfers an item subject to the agreement to a non-nuclear weapon state which has not concluded a full-scope safeguards agreement with the IAEA;*

- *A EURATOM member state is subjected to measures by the IAEA Board of Governors for violation of the relevant safeguard agreement;*

- *Acts of war or serious internal disturbances preventing the maintenance of law and order, or serious international tension constituting a threat of war, that threaten severely and directly the safeguarding or physical protection of such activities.*

Thus, the existence of a plutonium surplus in EURATOM or one of its member states would have to create a proliferation threat equivalent in seriousness to one or more of the above examples for the U.S. right of suspension to be applicable. The security, political and other surrounding circumstances that would contribute to such a situation are discussed at length in the Analysis.

If security and political conditions in the EURATOM states remain stable, it is unlikely that a plutonium surplus would create a proliferation threat sufficiently serious to justify suspension of advance consents. If the United States believes that a plutonium surplus appeared to give rise to an increase in proliferation risk within EURATOM, under the agreement the United States would be entitled to request additional information and assurances from EURATOM to ensure that the situation did not develop into a national security or proliferation threat that might justify suspension. No situation that would justify suspension of advance consents exists in EURATOM today.

(c) With respect to "maximum transparency," where in the Agreement is America guaranteed access to detailed data on the precise location and physical disposition of U.S.-obligated plutonium in EURATOM.

RESPONSE

The agreement does not guarantee the United States routine access to detailed data on the precise location and physical disposition of U.S.-obligated plutonium. The agreement does, however, lay a foundation for acquiring needed information through consultation institutions established by Article 12. Among other things, it calls for a Joint Committee to be established to promote cooperation and to ensure the effective

implementation of the agreement. Furthermore, the Parties are to consult, at the request of either of them, on any question arising out of the interpretation or application of this agreement.

The EURATOM safeguards system tracks and records the location and physical disposition of U.S.-obligated plutonium. According to Article 20, Commission Regulation of 19 October 1976 on Application of EURATOM Safeguards (No. 76/3227/EURATOM), "Nuclear materials subject to particular safeguards obligations entered into by the Community in an agreement concluded with a non-member state" are to "be identified separately for each obligation in . . . initial book inventory; . . . inventory change reports . . . ; physical inventory listings . . . ; and intended imports and exports . . . ."

(d) Why does the DOE -as GAO testified-still not have an effective system for tracking U.S. nuclear materials abroad, despite four GAO reports assailing your Department for not having such a system?

RESPONSE

The transition of the U.S. Government's system of record Nuclear Materials Management and Safeguards System (NMMSS) from Lockheed Martin Energy Systems (LMES) to NAC International was accomplished on September 1, 1995. The old NMMSS needed to be converted to a new, modern database management system for efficiency of operation, cost effectiveness, speed of response, and flexibility to make future modifications to respond to user requirements.

The Office of Nonproliferation and National Security tasked Lawrence Livermore National Laboratory (LLNL) to oversee this transition effort. LLNL in turn selected NAC International because of its unique nuclear expertise in the private industry managing "Fuel-Trac" (a nuclear fuel cycle database for commercial users); and also to take advantage of the efficiencies gained by having NAC International operate the tracking system for U.S.-origin nuclear materials as well as non-U.S. origin nuclear materials. For the past two decades NAC International has been tracking non-U.S.-origin nuclear fuels for the Department.

The Department endorses the General Accounting Offices (GAO) position that the development of any new system must properly assess users' requirements, should be based on cost-benefit analyses, and should follow sound systems development practices. However, the Department expected to reduce the recurring costs of the NMMSS by converting the existing unstructured software into industry standard query language rather than design a new system.

The reports issued by both the new and old NMMSS are intended to be identical. In its

December 1994 report on the old NMMSS, the GAO itself found that users of the old NMMSS ". . . were generally or very satisfied with the accuracy and completeness of the NMMSS information."

The GAO further stated that the old NMMSS ". . . is housed on a mainframe using unstructured COBOL code. Performing modifications on the existing NMMSS and designing custom reports are difficult because of the volume and complexity of the code." The development of reports on the old NMMSS was laborious and time consuming. It was also unstructured and costly to maintain, lacked formal software system documentation, and had a limited corporate memory. The new modern database management system will provide for efficiency of operation, cost effectiveness, speed of response, and flexibility to make future modifications to respond to user requirements.

The new system was tested in August 1995, using a formal test plan written by NAC International, approved by LLNL, and independently witnessed by an LLNL Technical Advisory Committee (TAC) to assure that all System Requirements Specifications were met. Of the 37 system tests developed, 33 tests were successfully completed. System Requirements Specifications that were not met by the August 1995 testing will be satisfied to support full system functionality.

We agree that a complete set of system development documentation did not exist; and we have moved to rectify this with the establishment of a project management plan, software quality assurance plan, and software configuration management plan. The Department recognized the need to implement these plans to assure success of the new NMMSS, and we are actively working with LLNL and NAC International to achieve the desired results.

While not all reports have been coded and tested, the remaining primary reports will be completed by the end of March 1996, and their subsequent testing will be completed by the end of April. We are confident that these actions, when completed and verified and validated by report users, will exceed U.S. Government requirements.

The transition of operation of the NMMSS from LMES to NAC International has taken longer and experienced more difficulties than anticipated by the Department of Energy. We expect all primary and secondary reports important to the users to be completed and verified, all testing to be successfully accomplished, all System Requirements Specifications to be met, all NMMSS control documentation to be completed and implemented, and the system to be fully operational by the end of the 1996 Fiscal Year. The Department of Energy is fully committed to successful operation of the new system to enable the Department to continue to fulfill its management responsibilities and the U.S. treaty and international agreement obligations for safeguarding our nuclear materials.

(e) How does this Agreement - with its secret list of storage facilities, its ban on material tracking, and its lack of U.S. access to data about the precise location and physical disposition of U.S. materials - foster - "transparency"?

RESPONSE

Exchanging lists and other information on a confidential basis is consistent with transparency between governments and organizations engaged in peaceful nuclear cooperation. Maximum transparency is not the same as maximum publicity. The Agreement does not ban the tracking of nuclear material. The EURATOM Safeguards Directorate needs to track all U.S.-obligated material in order to meet its obligations under the Agreement to the United States.

Transparency measures in nuclear cooperation must be considered in the context of the nonproliferation purpose to be achieved and risks involved in the public release of data on nuclear material. For example, according to the physical protection regulations set forth in INFCIRC-225, under section 3.2.7. , "the State should take steps to ensure that appropriate protection of specific or detailed information concerning the physical protection of nuclear materials in use, storage, or transport, and of nuclear facilities at which there is a potential for sabotage." Hence, it is well within the prerogative of EURATOM to maintain confidentiality of the list of facilities storing weapons usable material.

Enrichment

1. Since DOE opposes HEU fuel, why does the Agreement approve EURATOM's re-enrichment of U.S. fuel (subject to future conditions) and "recognize" that EURATOM reactors may "need to use" HEU?

2. Will this hurt our anti-HEU policy or the achievement of any of the goals of the RERTR program?

RESPONSE to Questions 1. and 2. Above

The Agreement does not approve EURATOM re-enrichment of U.S. fuel subject to future conditions. The U.S.-EURATOM Agreement is fully supportive of U.S. law and policy toward HEU. The Energy Policy Act of 1992 allows HEU exports from the United States only when the Nuclear Regulatory Commission determines that 1) there is no alternative fuel available enriched in the isotope 235 to a lesser percent than the proposed export that can be used in the reactor; 2) if no alternative fuel is presently available for a reactor, the reactor operator agrees to convert when such fuel becomes

available; and 3) the U.S. has a program under way to develop alternative fuels. Without such a fuel development program, the United States has been unable to supply HEU fuel. However, DOE will be beginning this month (March 1996) a program to develop high density fuels. This program, along with a commitment by EURATOM reactor operators to convert, will make it legally possible for the United States to supply HEU. However, the European Commission has been informed by the U.S. Government that it will neither supply HEU nor consent to the re-enrichment of U.S.-obligated enriched uranium unless the conditions of the Energy Policy Act are satisfied.

The Reduced Enrichment for Research and Test Reactors (RERTR) Program at the Department of Energy seeks to minimize the use of HEU by:

- *Developing low enriched uranium fuels for these reactors;*
- *Encouraging suppliers to design and market only LEU reactors; and*
- *Encouraging conversion from HEU to LEU for existing reactors.*

These goals will be enhanced through the consent rights contained in the new U.S./EURATOM Agreement for Peaceful Nuclear Cooperation.

3. How did Iraq, like Pakistan, obtain Urenco centrifuge designs? Is DOE confident that the IAEA and EURATOM can prevent such transfers in the future?

RESPONSE

In the 1980's, Iraq managed to contact some Germans in the Urenco program who were in a position to sell sensitive design information that was useful to the Iraqi nuclear weapons program. This case of industrial espionage involved serious lapses in Urenco security and pointed up the need for security measures covering the entire R&D and manufacturing sector, including private as well as government facilities.

Germany and other Western European countries have tightened their export controls. They have adopted a full scope safeguards policy and a dual use control list as reflected in the Nuclear Supplier Guidelines as amended in 1992. They have also cooperated with the United States in clarifying the trigger lists of the NSG and the Zangger Committee. Most recently, they have adopted a so-called "catch-all clause" in their export regulations. This requires an exporter who knows that an item is to be used in support of a program of weapons of mass destruction to apply for an export license even if the item is not on an export control list.

Given the fact that the Europeans are highly cooperative in preventing the spread of nuclear weapons, the Department of Energy is confident that the IAEA and

EURATOM can prevent transfers of sensitive nuclear equipment.

4. Does DOE support Urenco's plans to move to the USA?

RESPONSE

DOE neither supports nor opposes the proposed move by Urenco to the United States.

Europe's NP Credentials

As a member of the National Foreign Intelligence Board, DOE surely must be well informed about where proliferant countries are getting their bomb supplies--

1. How did DOE come to conclude that the countries in EURATOM have "strong nonproliferation credentials"?

RESPONSE

The factors leading to this conclusion include the following:

All of the fifteen EU member states are NPT parties and were strongly supportive of efforts to extend the NPT indefinitely and without conditions, an objective that was achieved on May 11, 1995, at the NPT Review and Extension Conference held in New York. President Clinton stated that nothing was more important to the United States than to achieve the indefinite and unconditional extension of the NPT; the efforts of our friends and allies in EURATOM contributed significantly to that outcome.

The fifteen members of EURATOM are also members of the IAEA and have helped to develop an increasingly strong partnership between the EURATOM Safeguards Directorate and the IAEA in ensuring the most efficient and effective application of IAEA safeguards in EURATOM member states. This New Partnership Approach (NPA) was agreed to in 1992 and published as INFCIRC-193. A cooperative approach has been developed that allows both EURATOM and the IAEA sufficient latitude to arrive at independent conclusions with regard to continued peaceful use of nuclear material subject to EURATOM safeguards. The technical effectiveness of EURATOM's regulatory system and organization has enabled the practical implementation of the elements of the NPA.

The EURATOM safeguards system offers an extra measure of confidence in the peaceful use assurances provided by EURATOM, whether in connection with the obligations of EURATOM member states under the NPT or pursuant to agreements for cooperation, such as with the United States. Indeed, the long experience of EURATOM on safeguards and on ensuring adequate levels of physical protection,

when combined with the strong nonproliferation credentials and long-term political stability of these democracies, adds credence to the assurances offered by EURATOM in the proposed agreement.

All EURATOM states are members of the Nuclear Suppliers Group (NSG) and the Zangger (NPT Exporters) Committee. As NSG members, they are committed to: requiring full-scope IAEA safeguards as a condition of new nuclear supply commitments, an effective system of controls on nuclear dual-use commodities, and the exercise of restraint both in the export of certain sensitive items (e.g., reprocessing technology) and where there is a significant increase in the risk of nuclear proliferation.

EURATOM has forged common policies among its members which have contributed to nuclear nonproliferation objectives. In the mid-1980s, EURATOM made Spain's membership contingent upon its accepting full-scope safeguards. Spain took this step and shortly thereafter became a party to the NPT. France joined the NPT in 1992, but its policy prior to that had been that it would act as if it were a party to the Treaty. France was also one of the original members of the NSG in the late 1970s. In 1984 and again in 1990, first the European Community and then the European Council issued strong policy statements on key issues related to nuclear exports and nonproliferation matters. The 1984 document recognized the risks associated with the use of plutonium and high enriched uranium in civil applications and adopted special procedures to increase the transparency of such operations.

All of the EURATOM member states also support the negotiation of a Comprehensive Test Ban Treaty no later than 1996 and of a convention to ban the production of fissile material for nuclear weapons or other nuclear explosive devices. These negotiations are U.S. initiatives and are important to our broader nonproliferation objectives.

Finally, there has been no credible reporting that would raise any question about the commitment of any members of EURATOM to their NPT obligations. In general, the members of EURATOM provide strong support to the full range of regional, export control, and global issues related to advancing nonproliferation goals.

2. Does DOE believe that the records of European governments and firms with respect to nuclear smuggling, supplier behavior, and cooperation with the U.S. on implementing multilateral sanctions (most recently against China and Pakistan) have been strong?

RESPONSE

As members of the Nuclear Suppliers Group and the NPT Exporter's Committee the group of EURATOM governments has pledged not to transfer special nuclear

materials, or especially designed or prepared materials or technologies to produce or utilize special nuclear materials without an agreement with the IAEA that the special nuclear material be under a safeguards agreement. Also, these governments are subscribing members to the Nuclear Suppliers Group Dual-Use Arrangement which have agreed not to authorize transfers of equipment, material, or related technology as identified in its Annex if : 1) it is for use in a non-nuclear weapon state in a nuclear explosive activity; 2) it is for an unsafeguarded fuel-cycle activity; 3) there is an unacceptable risk of diversion to such an activity; or 4) the transfer is contrary to the objective of averting the proliferation of nuclear weapons.

Currently, the Department of Energy understands that each EURATOM member state government has implemented, within its national legislation, the obligations and commitments which the Nuclear Suppliers Group and the NPT Exporters Committee have adopted. Also the Department of Energy is not aware that any EURATOM government does not fully support the principals in either of these multilateral export control regimes. The NPT Exporter's Committee and the Nuclear Suppliers Group do not endorse multilateral sanctions, but rather have conditions of supply which are subscribed to as a norm of conduct which all members have agreed to follow.

3. Why does DOE's analysis of consents (p.51) claim that a diversion of plutonium from France or Britain "would not involve a 'risk of proliferation'"?

4. The same page of that analysis asserted that "Diversion by a NWS is therefore not relevant to section 131b. Risk analysis" -- considering the volume of US-origin plutonium in France and Britain, what is the basis for this conclusion?

RESPONSE to Questions 3. & 4. Above

These questions are answered together. The full quotation to which they refer reads as follows:

> ***The COGEMA sites at La Hague and Marcoule, France, and THORP and Dounreay reprocessing facilities in the United Kingdom, ... are located in the two nuclear weapon Member States of EURATOM. Even in the extremely unlikely event that either government would attempt to divert nuclear material subject to the Agreement to its weapons program, this would not involve a "risk of proliferation", i.e., the acquisition of a nuclear explosive device by a non-nuclear weapon state. Diversion by a NWS [nuclear weapon state] is therefore not relevant to section 131.b. risk analysis. [Emphasis added.]***

Section 131.b. of the Atomic Energy Act requires an assessment of the "risk of proliferation" before the Secretary of Energy and the Secretary of State approve a

subsequent arrangement involving reprocessing. "Proliferation" is the specific concern at which section 131.b. is aimed. In U.S. law and policy, nuclear proliferation refers to the acquisition of a nuclear explosive device by a non-nuclear weapon state, as defined in the Nuclear Non-Proliferation Treaty of 1968 (NPT). Under Article X of the NPT, a non-nuclear weapon state is one that had not exploded a nuclear weapon or other nuclear explosive device before January 1, 1967. Under the NPT, both France and the United Kingdom are nuclear weapon states, and both have separate, unsafeguarded fuel cycle facilities to support their military applications of nuclear energy. Diversion of U.S.-obligated plutonium from a civil reprocessing plant to the weapons program of a nuclear weapon state would not, therefore, involve the proliferation of nuclear weapons.

Though not a proliferation risk, such diversion would be an extremely serious violation of the U.S.-EURATOM cooperation agreement, as well as a serious breach of EURATOM safeguards and possibly IAEA safeguards. The Agreed Minute specifically provides that the grounds for suspension of advance consents include a nuclear-weapon state member of EURATOM detonating a nuclear explosive device using any item subject to the agreement, as well as material violation of either IAEA or EURATOM safeguards by any EURATOM member state.

Finally, it should be emphasized again that diversion of U.S.-obligated plutonium from a civil reprocessing plant to the weapons program of a EURATOM nuclear weapon state is extremely unlikely. These states have already deployed nuclear weapons produced by unsafeguarded fuel cycle facilities designed for production of weapons-usable plutonium. Neither government would gain any technical nor other foreseeable advantage by diverting civil plutonium, subject to the U.S.-EURATOM cooperation agreement and to EURATOM safeguards, for weapons use.

Sensitive Nuclear Technology

Over the years, the Executive has substantially redefined the term "sensitive nuclear technology" - the Executive appears to have adjusted its definition of the term according to the level of technological achievement of the cooperating parties, rather than treating certain forms of SNT (e.g., reprocessing and enrichment) as inherently "sensitive nuclear technology" --

1. How did this change come about and on what statutory basis?

2. Is any technology treated by our government as inherently SNT?

RESPONSE to Questions 1. & 2. Above

The term "sensitive nuclear technology" is defined in section 4(6) of the Nuclear Non-

Proliferation Act of 1978 (NNPA) as follows:

> *"sensitive nuclear technology" means any information (including information incorporated in a production or utilization facility or important component part thereof) which is not available to the public and which is important to the design, construction, fabrication, operation or maintenance of a uranium enrichment or nuclear fuel reprocessing facility or a facility for the production of heavy water, but shall not include Restricted Data controlled pursuant to chapter 12 of the 1954 Act."*

Since its enactment, DOE has consistently used standards in determining what is sensitive nuclear technology (SNT) that are not entirely technology-based standards. The Department's July 1986, "Guidelines for the Designation of Sensitive Nuclear Technology" formalizes the tests that the agency has historically used to determine whether information "is important to the design, construction, operation or maintenance" of a facility for uranium enrichment, reprocessing or heavy water production. The guidelines divide this determination into three parts: (1) a categorization of the information proposed to be transferred; (2) a technical evaluation of the proposed transfer, i.e., a determination of its significance to design, construction, operation, or maintenance of a facility covered by the statute; and (3) a judgment as to the technical significance of the information to the proposed recipient given the status of that country's nuclear program, and other case specific considerations bearing on such things as available intelligence regarding the proposed recipient, the proprietary value of the information, and prior treatment of similar export issues.

DOE believes that this approach to determining what is "important to" is fully consistent with the language of section 4(6) of the NNPA and its legislative history. The guidelines carry out the intent of the Congress that such information not be given to countries where it might assist in the proliferation of sensitive nuclear fuel cycle facilities.

U.S. assistance cannot be "important to" countries that have no need of such assistance to successfully carry out uranium enrichment, plutonium reprocessing or heavy water production. Therefore, U.S. assistance that might well be SNT to countries with little or no capabilities in enrichment, reprocessing or heavy water production is not likely to be SNT to countries whose capabilities in these area equal, or in some cases, exceed our own.

It should be noted that the United States has no plans for transfer of SNT to Euratom or any Euratom member state, nor does it plan to transfer any other technology relevant to enrichment, reprocessing or heavy water production which is controlled under section 57.b. of the Atomic Energy Act. No such requests are pending or

anticipated, especially since several Euratom countries are well advanced in uranium enrichment, and the United Kingdom and France are in the forefront in reprocessing. Therefore, it is unlikely that they would seek SNT from the U.S.

Consultations with Congress

In the last calendar year, how many times did DOE originate or participate in a briefing in fulfillment of the Department's consultative obligations under Sec. 602 (c) of the Nuclear Non-Proliferation Act?

RESPONSE

Section 602 (c) of the Nuclear Non-Proliferation Act of 1978 requires the Department of Energy, along with other departments and agencies, to keep the Congress "fully and currently informed with respect to their activities to carry out the purposes and policies of this Act and to otherwise prevent proliferation, and with respect to the current activities of foreign nations which are of significance from the proliferation standpoint." Since this requirement does not stipulate a frequency for DOE to report to Congress on these matters, the Department has not kept records of these consultations and accordingly is unable to quantify the number of times that DOE has talked to Congress on 602 (c) matters in the past year. However, the number is significant and the Department has very actively sought to keep the Congress informed of its actions.

Termination/Suspension

DOE's Analysis of Consents concluded that the Agreement "will not be inimical to" and "will not constitute an unreasonable risk to" the common defense and security. (p.80) The Department has in recent years come to recognize many of the ways in which health, safety, and environmental issues affect the national security. For example, DOE stated in its January 1995 report, "Closing the Circle on the Splitting of the Atom," that: "Now, the definition of `national security` is expanding to include other concerns: the environment, human health, the global economy, and the spread of nuclear weapons" (p.77) Does the DOE interpret the U.S. suspension right contained in Para. 8(A) of the Agreed Minute as extending to circumstances involving threats to U.S. security arising from activities that endanger the environment or human health?

RESPONSE

The United States has the right - an unambiguous, unilateral right - to suspend its advance, long-term consent to prevent a significant increase in the risk of nuclear proliferation or a threat to the national security. While it is difficult to imagine an environmental or human health situation in Europe which would represent at the same time a serious threat to U.S. national security, it is totally at the discretion of the United States to determine what circumstances represent such a threat. While the situations listed in paragraph 8.A. (a) of the Agreed Minute are illustrative of the degree of seriousness needed for suspension, the United States may suspend its consent rights in other situations, conceivably including situations involving environmental or human health concerns so long as the situation is of sufficient magnitude.

NUCLEAR ENERGY INSTITUTE

Responses from Marvin Fertel
Nuclear Energy Institute
to Questions from Senator John Glenn

Safeguards

You have testified that the Agreement commits all of EURATOM's non-nuclear weapons states to have "full scope safeguards of the IAEA" –

(a) Does the Agreement not allow such countries to apply safeguards that are, in EURATOM's judgment, only "equivalent" to IAEA safeguards?

All non-nuclear states of EURATOM are parties to the Treaty on the Non-Proliferation of Nuclear Weapons (NPT), and must accept full-scope IAEA safeguards. The Agreement, in Article 6, requires application of IAEA safeguards to U.S.- obligated nuclear material pursuant to the agreement between EURATOM, the IAEA and the non-nuclear weapons member states within EURATOM. In addition, it is our understanding that provisions for "fall-back" safeguards are incorporated into all agreements for cooperation signed by the United States. We further understand that the intent of even the fall-back safeguards is to still ensure the imposition of IAEA safeguards if they exist. Only in the unimaginable situation when IAEA safeguards are no longer available would the Agreement call for the application of a level of safeguards "equivalent" to full-scope IAEA safeguards. Clearly these types of provisions are intended to ensure that U.S.-obligated material in EURATOM countries, or in other countries that have agreements for cooperation with us, are under an effective safeguards program.

(b) What is NEI's position with respect to the application of "equivalent safeguards" instead of IAEA safeguards and what precedent do you see this setting for other regions or countries?

As stated in the answer to the preceding question, our understanding of the wording in the agreement is that it requires full-scope IAEA safeguards. Only in a situation where the unimaginable occurs and IAEA is no longer able to implement

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full-scope safeguards does the U.S. require EURATOM to apply a safeguards regime "equivalent" to IAEA safeguards. Given this construction of U.S. requirements for the application of equivalent safeguards, we believe the U.S. approach is one that says that even absent the existence of IAEA safeguards, U.S.-obligated material must be protected by an equivalent safeguards regime. The "precedent" would appear to us to be one that strengthens the worldwide non-proliferation regime and ensures the continued safeguarding of U.S.-obligated material.

Nonproliferation Credentials

You have claimed that there is a broad and deep sharing of non-proliferation goals between the US and Euratom members –

(a) Are you troubled by the widespread reports of the extent to which European suppliers have sold nuclear related goods to Iraq, Pakistan and other countries that are working on the bomb?

Reports of nuclear-related goods that are being used for anything other than peaceful applications in non-nuclear weapons states are always troublesome to those who are committed to ensuring that the many benefits of peaceful nuclear energy can be shared worldwide within a strong non-proliferation framework. It is our understanding, however, that the incidents referred to in these reports, which appear to be limited and not "widespread," are instances, where in many cases, the nuclear-related goods are stolen, not sold. While we remain troubled by instances in which specific individuals take actions to benefit only themselves, we certainly expect that the actions being taken by the companies and their governments to prevent future problems will be effective. Furthermore, from a broader perspective, all of the EURATOM member countries are parties to the NPT and all European suppliers are members of the Nuclear Suppliers Group (NSG) and follow NSG guidelines for exports on the nuclear list and for potential dual-use exports.

(b) Has Europe fully supported U.S. policy that seek to eliminate the use of HEU fuels and to avoid the accumulation of excess plutonium?

The U.S. government has worked with Western Europe to convert research reactors that use HEU to low-enriched uranium fuel. We understand that as a result of this cooperative effort, of the forty or so research reactors in Europe, all but four have converted or have committed to convert to LEU fuel. Furthermore, while some of our European allies have as a matter of their national policies, pursued a closed nuclear fuel cycle option, these countries reprocess plutonium for the purpose of making mixed oxide fuel for use in reactors and in that regard, we believe seek to avoid "excess" plutonium.

(c) Does NEI support this policy?

NEI supports the policy of the U.S. Government regarding the use of HEU fuel and the accumulation of excess plutonium as expressed in our laws and in the non-proliferation policy articulated by the President.

(d) Do your European commercial competitors face the same type of export licensing and enforcement controls that companies belonging to NEI face?

NEI membership includes nearly 300 international corporate members, including both U.S. and European suppliers. All U.S. and European suppliers are members of the Nuclear Suppliers Group and adhere to NSG export guidelines. We work closely with many of our U.S. suppliers on addressing U.S. policies and regulatory requirements, so are much more familiar with the situation in the U.S. than in Europe. In this regard, we could offer the observation that the implementation of U.S. requirements appears to sometimes be unnecessarily cumbersome and causes difficulty for U.S. suppliers attempting to compete effectively in the international market. Also, we believe that in today's global economy, the U.S. and the other nuclear nations need to work more towards an effective multilateral framework for peaceful nuclear commerce, rather than a unilateral regime. We believe it is essential for the U.S. to maintain its leadership role in the world regarding the peaceful uses of nuclear energy. We believe that leadership role will be enhanced by establishing an international framework based on multilateral agreements and cooperation, as opposed to one that fosters unilateral actions by us and the other nations pursuing peaceful uses of nuclear energy.

U.S.-Euratom Agreement

Response to Questions Submitted to
Fred McGoldrick
U.S. Department of State
By Senator John Glenn
Ranking Member
Committee on Governmental Affairs
United States Senate

Europe's Nonproliferation Credentials

The materials submitted with the Agreement use the words "impeccable," "exemplary," and "strong" with reference to Europe's nonproliferation credentials --

1. To what extent was the Administration's decision to agree to a long-term advance consent arrangement with Euratom based upon an assessment of the nonproliferation credentials of Euratom's members?

RESPONSE: The U.S. decision was certainly based on an assessment of Euratom's nonproliferation credentials. The assessment considered, inter alia, Euratom's (and/or its member states')

a) adherence to and support of the NPT,

b) support of the IAEA and its safeguards system,

c) adherence by the nonnuclear weapon states of Euratom to fullscope IAEA safeguards,

d) adherence to the Nuclear Suppliers Guidelines and the Zangger Committee,

e) adherence to the Euratom Treaty and its safeguards system, and

f) maintenance of adequate physical protection and adherence to the Physical Protection Convention.

On European nonproliferation credentials, see also the Department of Energy's Analysis of Consents and Approvals submitted to Congress with the text of the proposed U.S.-Euratom agreement.

2. Did this assessment entail a thorough review of available evidence concerning Europe's numerous contributions, both past and present, to the global proliferation threat, especially with respect to supplies to the Middle East and South Asia?

3. Who performed this detailed assessment and when was it performed?

4. Will the Administration provide the Congress with an unclassified summary of the extent of these contributions?

RESPONSE (Questions 2-4): No separate study of the issue posed in question 2 was conducted. However, the U.S. has closely followed the procurement activities of countries of proliferation concern that have taken place in Western Europe and elsewhere. We are aware of exports from Western Europe during the 1970's and 1980's which contributed to nuclear weapons programs of certain countries. However, Western European countries have tightened their export controls substantially in recent years. They have adopted a fullscope safeguards export policy and a dual use control list as reflected in the Nuclear Supplier Guidelines as amended in 1992. They have also cooperated with the U.S. in clarifying the trigger lists of the NSG and the Zangger Committee. Most recently they have adopted a so-called "catch-all clause" in their export regulations. This requires an exporter who knows that an item is to be used in support of a program of weapons of mass destruction to apply for an export license even if the item is not on an export control list. We continue to monitor procurement efforts by countries of proliferation concern. We have found the Europeans to be highly cooperative with us in our efforts to halt attempts to purchase items on the international market in support of nuclear weapons programs.

5. Has the Administration undertaken an assessment of the claim by Mr. John Gordon, a former senior UK foreign ministry official, who publicly charged in 1992 that the British government violated its commitment under Article I of the NPT by assisting Iraq to acquire the bomb? To what extent did the UK government approve export licenses for nuclear or dual-use goods destined to Iraq's nuclear weapons program, or otherwise assist such program, in the period following the destruction of the Osirak reactor in 1981?

RESPONSE: We are not aware of any information to support an accusation that Britain has violated its obligations under Article 1 of the NPT. The United Kingdom recently published the Scott Report covering its three year investigation into the export of weapons-related materials to Iraq. We have not yet

received a copy of that report, but understand that it identifies lapses in the administration of British export controls on dual-use technologies during the 1980s.

6. Public reports indicate that Urenco centrifuge technology was diverted to Pakistan in the mid 1970's and again (perhaps on more than one occasion) to Iraq in later years -- What weaknesses in European nonproliferation controls permitted such transfers to occur?

RESPONSE: In a case of lax security procedures covering foreign nationals, Pakistani national A.Q. Khan (who we understand was also a naturalized Dutch citizen) was employed in the mid-1970s at a Dutch manufacturing firm that was a sub-contractor to Urenco, and stole sensitive Urenco centrifuge design information.

In the late 1980s, Iraq managed successfully to contact a few German individuals associated with the Urenco program who were in a position, and willing, to sell sensitive design information that was valuable to the Iraqi nuclear weapons program.

Both were cases of industrial espionage involving serious lapses in Urenco security. They demonstrate that non-proliferation controls (European or otherwise) must include not only strong national export controls on the books, but also tight security measures covering the entire R&D and manufacturing sector for sensitive equipment -- for private as well as government entities.

In the A.Q. Khan case, the Dutch government as well as the company in question responded by instituting much more rigid security procedures, and the Dutch authorities prosecuted A.Q. Khan in absentia.

Plutonium Policy

1. President Clinton's nuclear policy statement of 9/27/93 stated that the US "does not encourage the civil use of plutonium" -- how is the 30-year advance US consent for Europe to engage in the widespread civilian uses of US-obligated plutonium consistent with this policy, especially given the statement in the DoE Analysis of Consents that "Use of US-obligated plutonium throughout [Euratom]...will therefore follow as a natural and foreseeable result from the advance approval"?

RESPONSE: The Administration policy toward civil reprocessing and use of plutonium has several dimensions. The United States does not encourage the civil uses of plutonium and does not itself engage in plutonium reprocessing. It is the position of the United States that the continued production of separated plutonium is not justified on either economic or national security grounds and its accumulation creates serious proliferation and security dangers. We continue to make these views known publicly and privately.

However, the President has determined that the U.S. must continue to be a reliable partner in the civil nuclear field. For Western Europe and Japan, where there are large, advanced and well-established civil reprocessing and plutonium use programs and comprehensive non-proliferation commitments, it is U.S. policy to maintain its commitments regarding the reprocessing of spent fuel and civil uses of plutonium. This is not a policy of encouraging reprocessing. Rather, it is an acknowledgement of the excellent non-proliferation credentials of close allies and friends as well as the sovereign right of these states to make their own energy choices. Moreover, it is a recognition that it would be inappropriate and counterproductive to breach our commitments to our allies and friends or to adopt a confrontational policy. Confrontation would only divert attention from cooperative efforts to stop proliferation and undercut our fissile material initiatives with respect to countries currently outside the non-proliferation regime.

Under the previous U.S. agreement with EURATOM, member states were free to reprocess, store, and use the recovered plutonium subject <u>only</u> to assurances with respect to safeguards, peaceful use and obtaining the prior consent of the United States to retransfer. There was no U.S. control over reprocessing. If the existing agreement were not replaced, the Europeans would still be free to conduct their reprocessing and plutonium use programs without any need to obtain U.S. approval. With the new agreement we obtain a reprocessing consent right, we give our consent on an advance long-term basis, and we can suspend our consent if need be to prevent a significant increase in the risk of proliferation or a threat to U.S. national security. This is a substantial strengthening of U.S. non-proliferation controls.

2. Given that Euratom will soon expand to include several countries from Eastern Europe, which will benefit from the same consents as apply to the rest of Euratom, how is this expansion consistent with the "Western Europe" focus of the 9/27/93 policy statement?

RESPONSE: For countries of the former East Bloc to be eligible for membership in the European Union, it is clear that they will need to complete their transformation into societies unequivocally committed to "Western" political and economic values. In particular, they will have to demonstrate their firm commitment to democratic practices and ideals and market economies. These transformations are already under way. When and as they are completed, the countries in question will have become a part of "Western Europe" in the crucial political (as opposed to merely geographic) sense of the term.

3. The White House said in 1994 that US nonproliferation efforts include "comprehensive efforts to discourage the accumulation of fissile materials, to seek to strengthen controls and constraints on those materials, and over time, to reduce world-wide stocks" -- How does this agreement "discourage the accumulation of fissile materials" in Euratom?

RESPONSE: The Administration does in fact believe that it is essential to reduce and eventually eliminate accumulations of plutonium worldwide. However, the new U.S.-Euratom Agreement was not, in our judgment, the right vehicle for pursuing this particular policy objective. We are engaged in active discussions in a more appropriate forum with the member states of EURATOM, as well as other countries with reprocessing and plutonium use programs, on the need to minimize the stockpiling of plutonium.

4. Given that in 1958, the Executive told Congress that the US would have the right to conduct detailed audits of Euratom's uses of US-origin nuclear materials, but that there are no such audit provisions in the current agreement, how can the US "strengthen controls and constraints" over materials when it does not even know the precise location and physical disposition of such materials in Euratom? What is the likelihood that the US will obtain such information on a timely basis, facility-by-facility, via the Administrative Arrangement?

RESPONSE: The new U.S.-EURATOM Agreement demonstrably has stronger controls and constraints than the previous agreements. For example, the latter agreements required only EURATOM (not IAEA) safeguards; did not provide for U.S.-applied fall-back safeguards; and with respect to consent rights provided only for a U.S. right to approve retransfers. The new Agreement calls for EURATOM and IAEA safeguards routinely; U.S. fall-back safeguards if both the other systems for some reason fail to be applied; and the full range of consent rights required by the Atomic Energy Act.

A right to conduct detailed audits in EURATOM may have been appropriate for an earlier age. At the present time it is neither necessary, nor desirable, nor practical, nor obtainable. The U.S. and other countries long ago gave up the practice of applying their own safeguards to the nuclear materials they exported. Safeguards applied directly by the supplier would be prohibitively expensive; they would be duplicative of effort; they would be an open invitation for suppliers to compete on the basis of offering the least rigorous controls; they would be meaningless from a non-proliferation point of view in any country where the supplier did not hold a monopoly of supply; and they would undermine the effectiveness of the internationally accepted safeguards systems.

As for knowledge of location of U.S.-origin nuclear materials within EURATOM, there is no legal requirement for this, and the U.S. does not in fact need to have such knowledge in order to implement the Agreement in a manner that will promote, and not constitute an unreasonable risk to, the common defense and security. It is the job of the IAEA and the EURATOM safeguards directorate to know where all nuclear materials are in EURATOM, and they do an effective job of it. We expect that under the Administrative Arrangement, currently being negotiated, there will be a provision for annual reports by each Party to the other, broken out by type of nuclear material. (The old agreements had no such provision.) These reports will provide us with adequate knowledge regarding the amounts of nuclear material in EURATOM subject to the new Agreement.

5. With respect to the Department's reply to the question I submitted after the hearing of February 28 pertaining to the safeguards exemption for Pu-238 -- The Department cited provisions in sec.'s 54 b. and 127 of the Atomic Energy Act as the domestic legal authority for this exemption: (a) How do either of these provisions alter the explicit and unqualified requirement in sec. 123 for safeguards over "all special nuclear material"? (b) Why, notwithstanding the IAEA's standard, does the United States favor exempting from safeguards a material that the US Department of Energy has officially defined as a "weapons-usable nuclear material"? (60 F.R. 17344)

RESPONSE: (a) The requirements of section 123 of the Atomic Energy Act, as amended, regarding exports of special nuclear material, are superseded by the discretionary authority granted the Nuclear Regulatory Commission under section 54b. to exempt, notwithstanding the provisions of sections 123, 124,

and 125, certain classes or quantities of special nuclear material (including plutonium-238) from the requirements for a license. (See also the response to the Committee's question 5 of February 28.)

(b) The U.S. exemption of Pu-238 from safeguards is not taken "notwithstanding the IAEA's standard," as the IAEA has always exempted from safeguards plutonium containing 80 percent or more of the isotope Pu-238 (see also the response to question 1 under Safeguards below). It may be that the reference to "IAEA" in this question was intended to be a reference to "AEA." Even in that case, however, the U.S. exemption of Pu-238 from safeguards is not taken "notwithstanding the [AEA's] standard," since, as noted in the response to part (a) of this question, the AEA itself, by section 54b., allows for such exemption. The definition of weapons-usable fissile materials referred to in 60 F.R. 17344 is meant to apply, as the introduction to the list of defined terms clearly states, only to the term "[a]s used in this Notice." The Notice itself makes no pretense of defining the term for any broader purpose. This point is further underscored by the fact that the Environmental Impact Statement that was the subject of the F.R. Notice, which is now completed in draft form (DOE/EIS-0229-D, February 1996), actually adopts a different working definition of weapons-usable fissile materials for purposes of the EIS, namely, "All isotopes of Pu (except Pu-238) [emphasis added] and HEU that contains at least 20 percent uranium-235" (See page S-1).

Policy on Highly-Enriched Uranium (HEU)

Side Letter No. 43 to the Agreement states that "The United States Mission to the European Union...wishes to inform the Commission that the United States is firmly committed to eliminating over time the use of high enriched uranium from civil nuclear energy uses" --

1. How is this consistent with the US official recognition in the same letter that specific research reactors in Euratom may "need to use" HEU fuels?

RESPONSE: Side Letter No. 43 to the U.S.-Euratom agreement is fully consistent with U.S. policy to minimize the use of HEU in civil nuclear commerce. That policy has been a highly successful one with over 40 research reactors converted or committed to convert their HEU fuel to low enriched uranium (LEU). For a few high performance research reactors there is no alternative LEU available. These reactors will continue to require HEU until such alternative LEU fuel is developed.

The Energy Policy Act of 1992 prohibits HEU exports from the U.S. unless the Nuclear Regulatory Commission determines that 1) there is no alternative fuel available, enriched in the isotope 235 to a lesser percent than the proposed export, that can be used in the reactor; 2) if no alternative fuel is presently available for a reactor, the reactor operator agrees to convert when such fuel becomes available; and 3) the U.S. has a program under way to develop alternative fuels.

We have made clear to the European Commission that the U.S. will neither supply HEU nor consent to the re-enrichment of U.S. obligated enriched uranium unless the conditions of the Energy Policy act are satisfied.

Absent the fuel development program, the U.S. has not been able to supply HEU and the EURATOM reactor operators have begun to look elsewhere for a supply of fuel. DOE is initiating in March 1996 a program to develop the high density fuels that are needed for three West European research reactors to convert. This program will remove one legal obstacle to U.S. supply of HEU. If the EURATOM reactor operators also give a commitment to convert, U.S. supply would then be legally possible.

In addition, we have been discussing our policy on minimizing civil HEU use with the Russian Government. We are urging Russia to adopt a policy similar to ours -- i.e., to sell HEU to these research reactors only if they agree to convert to LEU fuels when they become available. The Department of Energy is funding (with a small contribution from the State Department) a bilateral program involving Argonne National Laboratory and a consortium of Russian scientific institutes for developing LEU fuels for Soviet-style research reactors. The new R&D program for high density fuels will also be applicable to the Soviet research reactors. We have also encouraged Russia to institute a program to import for disposition in Russia spent fuel containing uranium enriched in Russia from research reactors in Eastern Europe and elsewhere. We have explained that this can be used as an incentive to encourage reactor operators with Soviet-style research reactors to convert to LEU. The U.S. is currently considering such a program for the purpose of encouraging research reactor operators to continue with conversion to LEU. (DOE published on February 16, 1996 the final Environmental Impact Statement on a "Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reactor Spent Nuclear Fuel". On that same day, Secretary of Energy O'Leary announced DOE's preferred management alternative for the EIS, which is to institute a program to import for disposition in the U.S. foreign research reactor spent fuel containing uranium enriched in the U.S.) The successful implementation of this policy will be crucial to the continued success of U.S. efforts to minimize the civil uses of HEU.

2. Is the US still trying to persuade Germany not to construct a large new research reactor using HEU from Russia? What has been the result of this diplomatic initiative?

RESPONSE: We have urged the German Government and the Technical University of Munich to redesign the FRM II to use LEU fuel instead of HEU. Notwithstanding these efforts, the German authorities are proceeding with the construction and licensing of the research reactor using HEU. The Germans believe that the use of LEU would necessitate lengthy licensing delays and would entail a significant penalty in scientific and research value. The U.S. view is that the adverse nonproliferation precedent outweighs any scientific value of constructing a research reactor using HEU. We have informed the Germans that we will not supply HEU to a new reactor such as the FRM II nor consent to the re-enrichment of U.S. obligated low enriched uranium for this purpose. We have also informed them that the U.S. will not engage in any technical cooperation for development of the FRM II reactor.

3. What will be the effect on the global US effort to "eliminate" use of HEU fuels of this US recognition of Euratom's special "need to use" such fuels and, elsewhere in the Agreement, the US commitment to work with Euratom's need to re-enrich US material?

RESPONSE: As noted in the answer to question 1, the U.S.-Euratom agreement is fully consistent with U.S. policy and law with respect to HEU. The U.S. will supply HEU or consent to re-enrichment of U.S.-obligated HEU only under the conditions specified in the Energy Policy Act of 1992.

Moreover, it is important to note that while there is widespread support for minimizing the use of HEU, there is no international consensus that all research reactors should use LEU. The final report from Working Group 8 of the International Nuclear Fuel Cycle Evaluation stated: "It is recognized that there are specific applications requiring high flux reactor operation that can only be met with high enrichment fuel." In addition, in carrying out the treaty review responsibilities assigned to it, Main Committee II of the 1995 NPT Review and Extension Conference reached agreement in its report to the Conference on the following proposed Conference statement concerning the use of highly enriched uranium in civilian research reactors:

> "The Conference recognizes the non-proliferation benefits of the conversion of civilian research reactors from high enriched uranium to low enriched uranium fuel and, when

this is not feasible, of significant lowering of the level of enrichment, and welcomes the introduction of such conversions, where possible. It recommends further that international cooperation to facilitate such conversion be continued. The Conference recommends that States planning new civilian reactors avoid or minimize use of highly enriched uranium to the extent that this is feasible, taking into account technical, scientific and economic factors."

Notwithstanding the absence of an international consensus on the conversion of all research reactors to LEU fuel, the U.S. continues to urge such conversion to LEU when LEU fuel becomes available and to discourage the use of HEU in new research reactors.

Safeguards

1. Are there any circumstances under which US-origin special nuclear material might somehow remain in Euratom outside of IAEA safeguards; for example, would such material remain under IAEA safeguards if--

(a) the material is only covered by safeguards that are "equivalent" to IAEA safeguards?

RESPONSE: Under all foreseeable circumstances, the IAEA and Euratom will apply safeguards to nuclear material subject to the U.S.-Euratom agreement in the nonnuclear weapon state members of Euratom. Euratom will apply safeguards to nuclear material subject to the U.S.-Euratom agreement in the nuclear weapon state members of Euratom. IAEA safeguards may apply to such nuclear materials in the nuclear weapon states in accordance with their voluntary safeguards agreement with the IAEA. As noted in answer to the set of questions from the Committee dated February 28, Article 6 of the U.S.-Euratom agreement contains an elaborate system of fallback safeguards. That agreement requires four stages 1) the application of IAEA safeguards in accordance with the IAEA-Euratom member states safeguards agreement (NPT safeguards); 2) if an NPT safeguards agreement is not being applied, the Community is obliged to enter into another safeguards agreement with the IAEA of equivalent effectiveness and coverage; 3) if this is not possible, Euratom must apply safeguards of "equivalent" effectiveness and coverage; 4) if that is not possible, the U.S. and the Community would establish safeguards which provide equivalent effectiveness and coverage to the NPT safeguards agreement. Only in the highly improbable event that we reached stage 3 would IAEA safeguards not apply to nuclear material subject to the agreement. However, the material would remain

subject to safeguards arrangements which are equivalent in effectiveness and scope to the IAEA - Euratom - EU member state safeguards agreement specified in paragraphs 1(a) and 2(A) of Article 6 of the agreement. It should be noted that fallback safeguards equivalent in effectiveness and coverage to fullscope IAEA safeguards are provided for in other U.S. agreements. (See, for example, paragraph 2 of Article 9 of the U.S.-Japan agreement).

(b) the material is Pu-238?

RESPONSE: As noted in an answer to the set of questions from the Committee dated February 28, plutonium containing 80% or more of the isotope plutonium-238 has been exempted from the definition of special fissionable material and from IAEA safeguards since the establishment of IAEA safeguards. (See Article XX of the IAEA Statute, INFCIRC 66, and paragraph 36 of INFCIRC 153.) Thus plutonium containing 80% or more of the isotope Pu-238 will be exempted from safeguards in Euratom. Otherwise we would be faced with the absurdity of requiring that smoke detectors and pacemakers which are powered by plutonium containing 80% Pu-238 be subject to IAEA safeguards.

(c) the material is diverted but replaced by similar material under the Agreement's standards of "fungibility, equivalence, and proportionality"?

RESPONSE: The principle of substitution is a widely recognized practice which reflects the physical fact of life that there is no way to distinguish one atom of a particular isotope from any other atom of the same isotope. It has therefore been longstanding practice in peaceful nuclear cooperation agreements and IAEA safeguards to recognize that nuclear material is fungible.

However, a quantity of nuclear material may not be substituted for another quantity of nuclear material if the effect is to reduce the quality of the nuclear material, nor is there any equivalence between different elements such as uranium and plutonium. Hence, if EURATOM wants to substitute one batch of U.S.-obligated nuclear material for another batch of non-U.S. obligated nuclear material, it must do so in accordance with a set of rules of equivalence that is acceptable to the U.S. so as to ensure that a genuinely equivalent amount of nuclear material will be subject to the terms and conditions of the U.S.-EURATOM agreement both before and after the substitution.

There is then no question of "diversion" as stated in the question, and Euratom must fulfill its safeguards requirements specified in the agreement if substitution were to take place.

(d) a Euratom member state exercises its right to withdraw from the NPT?

RESPONSE: See answer to question 1(a) above.

2. Why does the US/Euratom "Declaration on Non-Proliferation Policy" (which echoes the NSG Warsaw declaration of April 3, 1992) refer specifically to the requirement for the nuclear trading partners of the Parties to have "IAEA safeguards" while the Agreement itself allows for the application of "equivalent" safeguards?

RESPONSE: The Declaration on Nonproliferation Policy states, inter alia, that the United States and the European Union stress in particular the importance of the NSG policy of requiring IAEA safeguards on all nuclear activities, present and future, as a condition of transfer (emphasis added) to any non-nuclear weapon state of any nuclear facilities, equipment, or components on the NSG and Zangger Committee trigger list.

This is fully consistent with the provisions of Article 6 of the U.S.-Euratom agreement which require fullscope IAEA safeguards for non-nuclear weapon state member states of EURATOM. The reference in the question to "equivalent safeguards" is to the fallback safeguards provisions of Article 6. As noted in answer to an earlier question from the Committee, the point of fallback safeguards is to protect U.S. national security interests by ensuring that either IAEA safeguards or some system of equivalent coverage and effectiveness will always be applied to U.S.-origin material. It is not necessarily to permit nuclear cooperation to continue, because U.S. law requires IAEA safeguards as a condition of nuclear exports. Provisions for fallback safeguards are found in all U.S. agreements for cooperation concluded since passage of the NNPA.

3. What major improvements in safeguards in bulk handling facilities does the Administration anticipate over the next 10 years? If those safeguards improvements do not materialize, and if instead significant deficiencies are identified in the application of safeguards to such facilities, how would this affect the Administration's assessment of the risks associated with the Euratom Agreement?

RESPONSE: In 1992, LASCAR, a multinational forum of experts on reprocessing technology and safeguards, concluded that techniques were available for effective safeguards on large fuel reprocessing plants expected to be operated on a commercial basis in the 1990s. This forum studied the designs for the large reprocessing plants then being planned/built in France, Germany, Japan, and the U.K. The forum determined that there is a wide range of techniques available for effective safeguards at these plants, and that the information and advice provided to the IAEA will permit the Agency to select appropriate combinations of the many techniques on a case-by-case basis in order to design effective, efficient and credible safeguards systems for these new plants. Techniques considered included a number of measurement methods for plutonium in inventory, including in-process inventory, and containment/surveillance and Near-Real-Time-Accounting for timeliness. These same techniques are available to the EURATOM Safeguards Directorate, which participated in the forum. Effective safeguards techniques for centrifuge enrichment plants were established in the early 1980s with the Hexapartite Safeguards Project and have been widely demonstrated since. Effective safeguards techniques for fuel fabrication facilities, including MOX facilities, have continued to develop with the improvements in neutron measurement technology and have been demonstrated in Japan and developed for the new MOX plant in Germany. Work is more in the area of development and engineering (D&E) of facility specific safeguards systems vice research and development (R&D) of new technologies. While important, and sometimes expensive, D&E involves far less technical risk than does R&D.

Over the next ten years, improvements in safeguards for bulk handling facilities will likely focus more on improving efficiency than on improving safeguards measurement capabilities. The Agency is interested in unattended monitoring, authentication of operator equipment, and remote monitoring that will allow it to perform the same tasks it currently does with less inspector manpower. The Agency is also seeking to better integrate measurement and containment/surveillance systems to improve the quality of overall conclusions on the absence of diversion. The Agency is also seeking credible assurance of the absence of undeclared activities. Measures such as environmental sampling and greater access to both nuclear and nuclear-related facilities will increase confidence in the measures on declared material. Success in meeting these goals will allow the Agency to increase the scope of its safeguards coverage while maintaining a more or less constant budget. Shortfalls in meeting these

goals will mean that more money will be required for inspections using current technologies, but it will not lead to technical deficiencies in the safeguards on bulk handling facilities. Thus the Administration's assessment of the risks associated with the EURATOM Agreement is unlikely to change on this account. We are confident that the U.S., the member states of EURATOM and the EURATOM Safeguards Directorate will cooperate to support the resource requirements necessary for effective safeguards in Europe.

4. In its replies to the legal questions I submitted after the February 28th hearing, the Department stated that Article 6 of the Agreement does not "provide that safeguards will no longer apply in any country that leaves the NPT." The specific form of safeguards identified in Article 6 refers to the safeguards that apply to Euratom states pursuant to the Euratom/IAEA safeguards agreement (INFCIRC 193). Article 25(b) of that agreement provides that safeguards "shall remain in force as long as the States are Parties to the Treaty" -- (a) If a Euratom state exercises its legal right to leave the NPT, how does INFCIRC 193 require the continued application of safeguards? (b) Given the lack of perpetuity of the safeguards arrangements found in INFCIRC 193, how can a "fall-back" arrangement that is fully "equivalent to" the rights and obligations of such safeguards satisfy the criterion of perpetuity? (c) Does any IAEA safeguards agreement require the continued application of "IAEA safeguards" over the full scope of the peaceful nuclear activities in a non-nuclear-weapon state that decides to leave the NPT?

RESPONSE:

(a) INFCIRC 193, the fullscope safeguards agreement between the IAEA, Euratom and its nonnuclear weapon state members pursuant to the NPT, does not require perpetuity of safeguards. (It is important to note, however, that the 1995 decision of the NPT conference to extend the NPT indefinitely supports the perpetuity of NPT safeguards agreements.) However, Article 6 of the U.S.-Euratom agreement requires perpetuity of safeguards as is required by Section 123 of the Atomic Energy Act. Thus in the highly improbable event that a nonnuclear weapon state member state of EURATOM should withdraw from the NPT, paragraph 3(a) of Article 6 specifies the obligation to maintain IAEA safeguards of equivalent "effectiveness and coverage".

(b) The U.S.-Euratom agreement does not provide for a fallback arrangement that is "equivalent to the rights and obligations" of INFCIRC 193. It provides for safeguards of equivalent "effectiveness and coverage".

(c) No, but the U.S.-Euratom agreement does contain such a requirement.

"Fungibility, Equivalence, and Proportionality"

1. How will the US ensure that US-origin materials or other obligated materials will -- after Euratom substitutes non-US materials in accordance with the terms of equivalence and fungibility -- remain subject to a peaceful use guarantee and other nonproliferation controls under the Agreement?

RESPONSE: The fundamental means of ensuring that U.S.-origin and other U.S.-obligated nuclear materials, and for that matter all nuclear materials in the EURATOM civil nuclear program, will remain subject to a peaceful use guarantee is the application of IAEA and EURATOM safeguards. Substitutions will not affect the peaceful use guarantee attached to U.S.-obligated nuclear material in any way. As regards other U.S. non-proliferation controls, substitutions in EURATOM will by definition remove the U.S. obligations from one quantity of nuclear material and place them on another, but always equivalent, quantity of nuclear material. There will be no loss of U.S. controls as a result of such substitutions.

2. Does the Agreement apply the principle of proportionality (etc.) to same extent as the principle is applied in the US/Japan Agreement?

RESPONSE: Yes.

3. Would special nuclear material produced through the use of US-origin facilities and materials be subject in entirety, under the principle of "contamination," to safeguards and peaceful use guarantees in the future?

RESPONSE: Yes.

4. What is the status of the Administrative Arrangement contemplated by Article 16 of the Agreement? How does the Administration believe that Arrangement should deal with the principles of "fungibility, equivalence and proportionality"?

RESPONSE: The Administrative Arrangement is currently under negotiation with representatives of the European Commission. We expect that the provisions for fungibility and equivalence will be in line with current U.S. and international practice. The principle of fungibility will be implemented on

the basis that individual atoms have no characteristics that would identify them as being of a particular national origin. Thus inventories and reports on nuclear material subject to the Agreement will not need to identify physically the particular nuclear material originally subject to the Agreement, but only (and at all times) an equivalent quantity of the same type. Equivalence will be determined in a way such that the quality of a given quantity of nuclear material subject to the Agreement is not reduced as a result of the substitution. The approach to fungibility under the Agreement is analogous to the case of a person who deposits dollar bills in a bank and later makes a withdrawal. The person is satisfied to get back the right amount of money; he or she has no interest in getting back the same bills with the same serial numbers as those earlier deposited, even if that were possible. In the case of atoms, it is literally impossible, as atoms have no serial numbers. Finally, we expect that the Administrative Arrangement provisions on proportionality will be based on the principles set forth in paragraphs 14 and 15 of the Agreed Minute to the Agreement.

"Sensitive Nuclear Technology"

1. Does the Administration believe that it is permissible to export sensitive nuclear technology under terms that are less stringent than those that apply in agreements negotiated pursuant to sec. 123 of the Act?

RESPONSE: No. A transfer of SNT made "outside" an agreement for cooperation must meet all the requirements of Sections 127 and 128 of the Atomic Energy Act.

2. Does the Administration contemplate that reprocessing, enrichment and/or heavy water production technology, not deemed SNT, might be transferred to Euratom in the future? If so, under what circumstances would such transfers be authorized?

RESPONSE: The United States has no plans for transfer of sensitive nuclear technology (SNT) to EURATOM or any EURATOM member country, nor does it plan to transfer any other technology that is relevant to enrichment, reprocessing or heavy water production.

No such requests are pending or anticipated, especially since several EURATOM member countries are well advanced in centrifuge enrichment in Urenco, and the United Kingdom and France are in the forefront of reprocessing. Therefore, it is unlikely that they would seek such technology, SNT or otherwise, from the United States.

Any proposed transfers of enrichment, reprocessing or heavy water production technology would be considered on a case-by-case basis. However, it has been long standing U.S. policy to exercise restraint in the export of such technologies.

Right of Return

1. Where does the Atomic Energy Act require or authorize a period of consultations to precede the implementation of the right of return?

RESPONSE: Section 123 (a) (4) of the Atomic Energy Act requires that agreements for peaceful nuclear cooperation (except with nuclear weapon states) include "a stipulation that the United States shall have the right to require the return of any nuclear equipment and materials transferred pursuant thereto and any special nuclear material produced through the use thereof if the cooperating party detonates a nuclear explosive device or terminates or abrogates an agreement providing for IAEA safeguards." The statute does not require, authorize or prohibit a provision in an agreement for cooperation calling for a period of consultations to precede possible implementation of the right of return; the question of how the right of return would be exercised if a Party chose to do so is not addressed in any way.

It should be noted that other U.S. peaceful nuclear cooperation agreements also provide for a period of consultations in connection with exercise of the right of return. We regard such consultations as important since as a practical matter it would be impossible to implement the right of return in the absence of consultations.

2. Art. 13 provides authority for the U.S. to suspend or terminate an agreement if Euratom violates IAEA safeguards or "equivalent" safeguards in Art. 6 (3) yet the right of return in the same article applies only in the event of the violation of IAEA safeguards: where in the Agreement does the US specifically have a right of return in the event of a violation of non-IAEA or "equivalent" safeguards arrangement?

RESPONSE: Section 123 (a) (4) of the U.S. Atomic Energy Act requires a U.S. right of return if a non-nuclear weapon state cooperating partner "... terminates or abrogates an agreement providing for IAEA safeguards [emphasis added]." Article 13.2 of the U.S.-EURATOM Agreement meets this requirement by providing for a right of return "If either Party or a Member State of the Community ... terminates or abrogates a safeguards agreement with the Agency ... [emphasis added].

The EURATOM Agreement does not provide, and U.S. law does not require, a right of return in the event of a violation of an "equivalent safeguards agreement" that has replaced, "when appropriate and relevant," an IAEA safeguards agreement that has been terminated or abrogated. The exercise of the right of return and the conclusion of a safeguards agreement of equivalent effectiveness and coverage (e.g., a bilateral safeguards agreement with the United States) are essentially alternative methods of dealing with the very unlikely event that the EURATOM/IAEA safeguards agreement would be abrogated or terminated.

3. If the US had to exercise its right of return over transferred items, how would the US exercise this right over such items as reactors and other components or equipment that are immobile or highly radioactive?

RESPONSE: Section 123 (a) (4) requires that agreements provide for a U.S. right to require the return of items subject to the agreement if a cooperating partner abrogates or terminates an IAEA safeguards agreement or if a nonnuclear weapon state cooperating partner detonates a nuclear explosive device. However, actually exercising the right of return with respect to nuclear reactors, other components and nuclear material would encounter immense practical, financial and legal obstacles. In most cases exercising the right of return would not be feasible. However, as noted in paragraph 16 of the Agreed Minute to the U.S.-Euratom Agreement, Article 13 of the Agreement (including the right of return)

> "reflects the firm conviction of both Parties that they would view with the utmost concern acts constituting a material violation or breach of non-proliferation commitments by any country and that appropriate actions such as those provided for in Article 13 would be taken by the Community, its Member States or the United States of America in response to any material violation of non-proliferation commitments."

4. Art. 13 provides a US right of return in the event a Euratom party (inter alia) "materially acts in violation of" its safeguards obligations in Article 6 -- is a party in material violation of its NPT safeguards rights and obligations if it exercises its right under Article X(1) of the NPT to withdraw from the treaty and its right not to apply safeguards, pursuant to Art. 25 of the IAEA/Euratom safeguards agreement?

RESPONSE: As Article 13 specifies, the right of return would be triggered "If either Party or a Member State of the Community at any time following entry into force of this Agreement terminates or abrogates a safeguards agreement with the Agency and the safeguards agreement so terminated or abrogated has not been replaced by an equivalent safeguards agreement when appropriate and relevant."

Retransfers

1. The Atomic Energy Act requires controls over retransfers to any destination whatsoever, yet the Agreement only applies retransfer controls to "third countries" --

(a) Why does the Agreement not conform to the broader language required in sec. 123(a)(5)?

(b) How does the Agreement handle retransfers to persons, groups of nations, or other entities other than "third countries"?

RESPONSE: Section 123 (a) (5) requires that the cooperating party obtain the consent of the United States to retransfer "any material or ... any production or utilization facility transferred pursuant to the agreement for cooperation or any special nuclear material produced through the use of any such facility or through the use of any material transferred pursuant to the agreement" "beyond the jurisdiction or control of the cooperating party." The statute does not use the term "any destination whatsoever," nor does it require any particular language be used in the agreement for cooperation in order to fulfill its requirements. The test is not whether particular language is used but rather whether equipment and material covered by section 123 (a)(5) could be retransferred by EURATOM "beyond the jurisdiction or control of [EURATOM] without the consent of the United States."

The Agreement clearly meets this test. The term "third countries" includes persons and entities subject to the jurisdiction and control of the government of the "third country" in question. At present there is no "group of countries" other than EURATOM that has legal competence to exercise control over nuclear activities within its borders so that the "group" is treated as a single entity for the purposes of cooperation with the U.S.

2. Does the Agreement require that retransferred US nuclear materials must go to facilities that are under IAEA

safeguards? Does the IAEA itself require, pursuant to the IAEA/Euratom agreement implementing NPT safeguards, the imposition of safeguards on retransfers of safeguarded material outside of Euratom?

RESPONSE: Nuclear materials subject to the U.S.-Euratom agreement may only be retransferred from Euratom to third countries which are on a list provided by the United States. (See Article 8.1.(C)(i) and paragraph 2 of the Agreed Minute.) Eligibility for continued inclusion on such lists must be based, as a minimum, upon the satisfaction of the following criteria:

-- third countries must have made effective non-proliferation commitments, and

-- in the case of retransfer of items obligated to the United States from the territory of the member states of the Community, third countries must be party to a nuclear cooperation agreement with the United States.

All non-nuclear weapon states party to agreements for cooperation with the U.S. have safeguards agreements requiring safeguards on all facilities. As to third country nuclear weapon states, if we were to consent to retransfers to China or Russia, such retransfers would have to be in accordance, respectively, with the safeguards provisions of the U.S.-China Agreement, if and when that agreement can be implemented, and the safeguards provisions of a future U.S.-Russia agreement.

The IAEA-EURATOM safeguards agreement requires that all exports of safeguarded nuclear material from non-nuclear weapon states be reported to the IAEA. France and the U.K. have undertaken to report all nuclear material exports for peaceful purposes to any non-nuclear weapon state. All members of the European Union are required by their obligations under the NPT to export source or special nuclear material for peaceful purposes to non-nuclear-weapon-states only subject to safeguards in the recipient state. They have also agreed, as members of the NSG, to require full-scope IAEA safeguards as a condition of export of trigger list items to recipient non-nuclear weapon states.

<u>New Members of Euratom</u>

1. What rights does the US have in this Agreement to approve the extension of these consents to such nations?

RESPONSE: The U.S. has no rights to approve or disapprove the accession of new members to Euratom. However, new member states must meet the nonproliferation requirements of Euratom accession which include adherence to the Euratom Treaty, the NPT, fullscope safeguards and the NSG guidelines. A new member must also accept all the obligations of the U.S.-Euratom agreement including those relating to its consent provisions. In addition, see the answer to question 3 of the Committee of February 28.

2. If the US has reason to believe that a Euratom member is engaged in or may be considering certain proliferation-related activities, what recourse (other than termination of all cooperation with Euratom) would the US have to prevent transfers inside Euratom of US-obligated plutonium and other materials and equipment to such country?

RESPONSE: We assume this question relates to any member of Euratom and is not restricted to new members. The U.S. does not control the transfer of U.S.-obligated nuclear items within EURATOM. To attempt to do so would be contrary to the longstanding U.S. policy of treating EURATOM as a political and legal unit and would be unacceptable in principle to EURATOM. However, the Agreement contains certain provisions relating to proliferation risks and U.S. rights of suspension or termination. Article 13 provides that if a member state or the Community materially acts in violation of the fundamental provisions of Articles 4, 5, 6, 7, 10 or 11 of the agreement or contravenes a decision of the Arbitral Tribunal referred to in Article 12 or takes action of any kind which results in a material violation of its obligations under the Agreement, the U.S. has the right to cease further cooperation or to suspend or terminate, in whole or in part, the agreement. In addition, paragraph 8.A of the Agreed Minute provides the U.S. the right to suspend its consent to reprocessing or alteration in form or content of U.S.-obligated materials if the U.S. determines that the continuation of such consent would result in a significant increase of the risk of proliferation or entail a serious threat to the security of the United States. This suspension would apply to these activities as a whole.

In addition to these legal rights of the United States, it is important to stress that the Europeans themselves would be highly concerned about any proliferation-related activities of a member state, since such activities would present an immediate and proximate threat to them. They would take appropriate steps themselves to deal with such a threat. Given

the nonproliferation commitments and the numerous security arrangements in Western Europe, we doubt that any member state of Euratom would have the incentive to consider proliferation-related activities.

3. What assessment, if any, is made by the European Union of the adequacy of nuclear safeguards, physical security and export control measures in countries applying for membership? If any such assessment is made, would the US be privy to it under the terms of the Euratom Agreement or otherwise?

RESPONSE: We are informed by the European Commission that the European Council, in December 1994, adopted a pre-accession strategy for associated countries which had signed Europe Agreements with the European Union. (Bulgaria, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania and Slovakia. A draft Europe Agreement with Slovenia was initialled in June 1995.) These agreements are aimed at building closer political and economic relations to prepare the way to accession. For each market sector, including nuclear, a Commission White Paper sets out the main measures that Central and East European countries should take to prepare their economies to operate within the rules of the Union's internal market and suggests the sequence in which domestic law should be brought into line with European law.

Thus, the Eastern European countries are informed about the requirements of European legislation, including in the nuclear field. In the years leading up to actual accession, they will adapt their legislation to be in line with European legislation. A questionnaire has been sent to the countries in question, asking them to communicate to the Commission their domestic legislation in such fields as supply of nuclear materials, safeguards and export controls as well as information as to their international commitments in these fields. After reception and analysis of this information, a dialogue will be established in order to determine where action will have to be undertaken by these countries to bring their legislation in line with the details of European nuclear legislation, including the Union's international nuclear commitments.

As to information that may be available to the U.S., we note that the U.S.-Euratom Agreement contains a provision for the Parties to consult to promote cooperation, to ensure effective implementation of the agreement, to consult on nuclear questions of mutual interest and other significant matters relating to their cooperation, as well as on any question arising out of the interpretation or application of the agreement.

Agreement vs. Treaty

Questions: (a) Are there any specific types of US nuclear cooperation that could occur constitutionally only pursuant to a treaty? (b) May an Agreement for Cooperation extend an advance consent for 100 years or indefinitely? (c) May an Agreement be irrevocable?

RESPONSE:

(a) The U.S. engages in no form of nuclear cooperation that is not authorized by the Atomic Energy Act. Most forms of cooperation are covered by Agreements for Cooperation concluded pursuant to Section 123 of the Act, which prescribes that such agreements shall be concluded as executive agreements subject to a specific form of Congressional review. Others, such as component transfers under Section 109(b), may take place absent such an agreement, but subject to specified statutory criteria.

(b) Yes. In our view, a consent granted under the U.S.-Japan or U.S.-EURATOM agreement remains in effect indefinitely unless it is suspended or terminated pursuant to the agreement.

(c) All U.S. agreements for cooperation contain provisions allowing the U.S to terminate the agreement before its expiration under certain circumstances. None, therefore, is "irrevocable." The executive branch has no intention of negotiating an agreement for cooperation that would be of indefinite duration or that would not provide for the possibility of termination for cause.

Effect on US Laws

1. What is the meaning of the US commitment in Para. 5 of the Declaration on Nonproliferation Policy to seek the "elimination of provisions regarding consent" as nonproliferation conditions improve in the future?

2. What are the implications of this commitment with respect to the criteria for nuclear cooperation found in the Atomic Energy Act?

RESPONSE (Questions 1&2): There is no U.S. commitment in paragraph 5 of the Declaration on Nonproliferation Policy to seek the elimination of provisions regarding consent as nonproliferation conditions improve in the future. Paragraph 5 states:

"The United States further confirms its readiness to engage in negotiations with the European Atomic Energy Community concerning elimination of provisions regarding consent in so far as (emphasis added) improvements in the global nonproliferation environment lead to changes in the U.S. position (emphasis added) in this respect."

This statement means that if the U.S. were ever to conclude that consent rights were no longer needed to protect its nonproliferation interests, and if, as a consequence, it amended the Atomic Energy Act to eliminate the requirement for such consent rights, we would be prepared to negotiate a corresponding elimination of such consent rights in the U.S.-Euratom agreement. Such negotiations with Euratom would only take place if and when such legislative changes had taken place. We foresee no circumstances that would lead the U.S. to eliminate the requirement for consent rights.

Transparency

1. What is the Administration's best judgment concerning the number and location of facilities processing and/or utilizing US-origin plutonium in Euratom as of the year 2025? Approximately what quantity of separated plutonium does it anticipate to be in circulation in Euratom at that time? What are the major risks it anticipates associated with such processing and/or utilization, and the circulation of such amounts of plutonium at that time?

RESPONSE:

(a) Annex A of the Agreement provides a list of the facilities authorized to carry out reprocessing and alteration in form or content of U.S.-obligated nuclear material (the Delineated Program). Paragraph 8 of the Agreed Minute provides a mechanism for making changes to the list. A list of facilities eligible for storage of U.S.-obligated plutonium in Euratom is required under Article 8.3 of the Agreement, and has been provided to Congress on a Confidential basis. Article 8.3 of the Agreement provides a mechanism for making changes to the list of storage facilities.

We expect changes to be made to the lists during the period of the Agreement. Current best judgment indicates the number of processing facilities will decrease from the thirteen already listed in Annex A as some facilities are decommissioned before 2025. While new facilities may be added, it currently appears likely that nuclear industry consolidation will result in fewer individual facilities, perhaps with larger individual

capacities, processing nuclear material. It is reasonable to project that the current leading industrial companies in nuclear material processing in Euratom will maintain their strong positions in the market because of the economic and technological investment already committed. The difficulty in acquiring the necessary technology and applying it profitably in a relatively small industrial market and the magnitude of financial investment necessary to construct and operate nuclear material processing facilities also make it unlikely that many new organizations will enter this market. Finally, based on current trends, the nuclear power industry in the existing fifteen Euratom member states and the emerging democracies of Central Europe will not expand significantly in the coming decades, and this offers a disincentive to the construction of additional nuclear processing facilities. Therefore, our best judgment indicates that the number of facilities processing nuclear material, whether or not the material carries U.S.-obligations, will decrease during the term of the Agreement and the processing facilities will be located predominantly in France and the United Kingdom.

Assuming the price of uranium does not increase several fold in the next three decades, it is unlikely that nuclear utilities will utilize plutonium fuel except as part of a national strategy for security of supply for nuclear fuel or for technological advancement of the nuclear fuel cycle. The British, French and Japanese remain committed to spent fuel reprocessing and the utilization of plutonium as fuel while utilities in other countries that have participated in reprocessing/recycling programs have demonstrated lesser commitment. Therefore, it is reasonable to project that, within Euratom, the British and French will utilize plutonium, and approximately 70 reactors could potentially use plutonium in fuel as of the year 2025. Based on our projection that 10 to 15 percent of the plutonium in Euratom as of 2025 may carry U.S. obligations, we consider it reasonable to assume that 5 to 10 reactors may be utilizing U.S.-obligated plutonium at that time.

(b) While the quantity of separated plutonium in Euratom in 2025 cannot be predicted with certainty, our projection based on current trends and reasonable supply/demand assumptions indicates approximately 100 tons of plutonium may be in circulation in Euratom at that time and approximately 10 to 15 percent of that plutonium may carry U.S. obligations.

(c) We expect that the European Atomic Energy Community will remain strongly committed to maintaining appropriate physical protection of nuclear materials and international nuclear nonproliferation and related safeguards regimes during

the period of the Agreement. While the specific risks associated with the use of plutonium by Euratom member states in 2025 cannot be predicted with certainty, we are confident that risks will be minimized by Euratom's application of nuclear safeguards pursuant to the treaty establishing the European Atomic Energy Community, its affirmed support of the International Atomic Energy Agency and its safeguards system, enforcement of its laws and regulations and those of its member states concerning the peaceful use of nuclear energy, and the continued commitment of its member states to the Treaty on Non-Proliferation of Nuclear Weapons. We are assured by Euratom's non-proliferation credentials and record over the past decades that it will aggressively pursue effective programs to address risks that may evolve during the period of the Agreement. Moreover, the potential expansion of Euratom to include emerging democracies of Central Europe is an opportunity for the U.S. positively to influence their nuclear material safeguards, accountability and physical protection practices and potentially improve the international non-proliferation regime.

2. Will the US be able to track on a timely basis the precise location and physical disposition of the nuclear materials we sell to Europe or that are produced in Europe using US-origin technology, equipment, or materials?

RESPONSE: EURATOM will track, on a timely basis, the precise location and physical disposition of nuclear material subject to the U.S.-EURATOM Agreement in EURATOM. The U.S. will track, in a similar fashion, nuclear material subject to the Agreement in the United States. The U.S. will also independently keep track of U.S. nuclear exports to EURATOM, which EURATOM in turn will track as imports. It is expected that the Administrative Arrangement will provide for exchange by the two Parties of an annual report detailing, by type of nuclear material, the exact amounts of nuclear material received, produced, and shipped during the preceding calendar year, together with an ending inventory, for nuclear material within their respective jurisdictions subject to the Agreement. We expect that there will also be provisions for reconciling the respective records of the Parties. The annual reports will not specify the location of the nuclear material by facility, EU member state, or U.S. state. We regard this as unnecessary and of no practical utility. It should be recognized, of course, that nuclear material within EURATOM will always be tracked in terms of precise location by the IAEA and the EURATOM Safeguards Directorate, and within the U.S. by the DOE and NRC safeguards systems.

3. In 1958, the Administration told Congress that the US would be able to "weigh, assay, and count and otherwise verify" the original agreement with Euratom -- Congress was also told that the US would have rights to verify, using "mutually approved scientific methods...the effectiveness of the safeguard and control systems" applied pursuant to the Agreement: does the US have the same rights in the new Agreement?

RESPONSE: No, except in the unlikely event that IAEA and EURATOM safeguards are not being applied to U.S.-obligated nuclear material in EURATOM, in which case the U.S. would have a right directly to apply fall-back safeguards. See also the answer to Question 4 under Plutonium Policy.

4. When Euratom adds new facilities to its Article 8 list, how and when will Congress and the public be notified? Will the Administration at that time prepare any publicly available analysis of risks that may be associated with such new facilities? In general, in what circumstances will the Administration provide notice to the Congress and the public of changes in the nature and scope of the European nuclear program over the term of the Agreement?

RESPONSE: It is the Administration's intention that significant changes to the Annex A list of facilities relating to Article 8 approvals will be notified to Congress and the public by means of the President's annual report on non-proliferation pursuant to section 601 of the NNPA. The analysis of risks for the overall advance consent arrangement, including for new facilities, has already been done on a one time basis and has been submitted to Congress for its consideration together with the Agreement. The Administration will, of course, take into account new risks that may arise in the future insofar as these may be potential grounds for suspension of the advance consent arrangement. We cannot guarantee that such future risk assessments would be made publicly available, though of course they would be made available to Congress, if requested, on a classified basis if necessary. More routinely, the Department of State will be prepared to provide Congress and members of the public with a current copy of Annex A or with other available information regarding the nature and scope of the European civil nuclear program at any time upon request.

"Timely Warning"

With respect to the criterion of "timely warning" --

1. What types of security threats will be facing US materials inside Europe over the 30-year term of this agreement?

2. Is our government confident that it can accurately gauge and anticipate such threats over the next year, including terrorist threats, diversions of small amounts of material, and thefts?

RESPONSE (Questions 1&2): We cannot predict any specific serious security threats facing U.S.-obligated nuclear materials or any other nuclear materials in Euratom over the next thirty years. We have full confidence in the nonproliferation commitments of our European allies and friends, and hence regard any attempts at diversion as highly improbable. We also regard the physical protection systems in effect in the member states of Euratom as highly effective and capable of dealing with terrorist threats or thefts and expect them to continue to be effective. If we were to judge such systems inadequate in a particular facility, we could require removal of U.S.-obligated nuclear material from that facility. Physical protection of nuclear material in Euratom, whether U.S.-obligated or not, is the responsibility of the member states of Euratom. We stand ready, of course, to cooperate with our European allies and friends, through intelligence sharing and other means, in dealing with terrorist threats to nuclear material, whether U.S.-obligated or not. Finally, as noted elsewhere, we have rights to suspend or terminate the agreement in whole or in part, to suspend certain consents, and to require the return of items subject to the Agreement under certain circumstances.

Contrasts with the US/Japan Agreement

1. Can the US suspend or terminate -- as it can with Japan -- a consent with respect to a specific facility or country inside Euratom?

RESPONSE: Pursuant to paragraph 8 of the Agreed Minute the U.S. may suspend its consent to reprocessing and alteration in form or content of U.S.-obligated materials with respect to the Euratom delineated program as a whole. With respect to facilities storing plutonium, HEU or U-233, the U.S. may require the removal of such materials from a specific facility if it concludes that physical protection is not adequate. Such storage facilities include all facilities which store plutonium, HEU or U-233.

2. Whereas the US/Japan agreement contains a prohibition on the transfer of Restricted Data under the Agreement, why does the US/Euratom Agreement not contain a similar prohibition?

RESPONSE: Sections 123 and 144 of the Atomic Energy Act of 1954, as amended, prohibit the United States from transferring Restricted Data to another nation except under an agreement for cooperation that authorizes such a transfer. Article 2 (1)(b) of the U.S./Japan Agreement specifies that no Restricted Data shall be transferred under that Agreement. Notwithstanding the absence of a similar provision regarding the exchange of Restricted Data in the U.S.-Euratom Agreement, the United States is bound to act in accordance with its national laws. Euratom is well aware of this. Neither the United States nor Euratom favored an agreement that provided for Restricted Data exchanges, and the new Agreement does not authorize such transfers. Euratom was concerned, however, about the transferability of nuclear power reactor technology. This concern was satisfied by assurances from the United States that this technology is no longer classified as Restricted Data and by confirmation in United States Side Letter No. 46 that reactor technology may be transferred outside an agreement for cooperation.

3. Whereas the US/Japan agreement contains a prohibition on the transfer of SNT under the Agreement, why does the US/Euratom Agreement not contain a similar prohibition?

RESPONSE: Article 2 (1)(b) of the U.S.-Japan Agreement prohibits sensitive nuclear technology, as well as Restricted Data, from being transferred under the U.S.-Japan agreement.

While the U.S.-Euratom agreement itself is silent on sensitive nuclear technology transfers, the issue is addressed in United States Side Letter No. 46. In this Side Letter, the U.S. notes that the agreement does not provide for the transfer of sensitive nuclear technology. While the sensitive nuclear technology issue is handled differently in the two agreements, the substantive outcome is the same. Sensitive nuclear technology could not be transferred under either agreement absent the negotiation of an amendment to the agreement, which would have to be submitted to Congress consistent with the review procedures in section 123 of the U.S. Atomic Energy Act. Side Letter No. 46 goes on to note that SNT information (but not a facility or major critical component) may be transferred to the Community outside an agreement for cooperation pursuant to sections 127 and 128 of the U.S. Atomic Energy Act.

It should be noted that the United States has no plans for transfer of sensitive nuclear technology to Euratom or any Euratom member country, nor does it plan to transfer any other technology relevant to enrichment, reprocessing or heavy water

production that is controlled under section 57.b. of the Atomic Energy Act. No such requests are pending or anticipated, especially since several Euratom member countries are well advanced in centrifuge enrichment in Urenco, and the United Kingdom and France are in the forefront in reprocessing. Therefore, it is unlikely that they would seek such technology, sensitive nuclear technology or otherwise, from the United States.

4. Whereas the US/Japan agreement contains a provision recognizing that the agreement is subject to the "laws, regulations, and license requirements" in the respective countries, why does the US/Euratom Agreement not contain a similar prohibition?

RESPONSE: See answer to question 8 from the Committee dated February 28.

5. Whereas the US/Japan agreement and US law requires safeguards over all plutonium isotopes, why does a Side Letter to the US/Euratom Agreement contain a specific exemption for Pu-238?

RESPONSE: The U.S.-Japan Agreement requires safeguards on all plutonium transferred to Japan pursuant to the Agreement, or produced through the use of items so transferred (Article 9(1)(A)). This satisfies the requirement of section 123 of the Atomic Energy Act. But section 54b. of the Act explicitly exempts transfers of plutonium containing 80 per cent or more by weight of plutonium-238 from the requirements of section 123, including the requirement that the transfer be pursuant to an agreement for cooperation. U.S. Mission Note No. 45 relating to the U.S.-EURATOM Agreement simply makes explicit the fact that plutonium with an isotopic composition of Pu-238 exceeding 80% need not be brought within the scope of the Agreement. There is no counterpart to this note in connection with the U.S.-Japan Agreement, but that does not alter the fact that U.S. exports of Pu-238 in concentrations greater than 80 percent to Japan are treated in exactly the same way as they have been and will be treated when made to EURATOM: They are not subject to the agreement, and do not require safeguards.

The other provision of U.S. law that might be relevant here is section 127(1) of the Act, which requires, as a condition for the export of special nuclear material, "IAEA safeguards as required by Article III(2) of the [NPT]". But the NPT in turn calls for safeguards in accordance with an IAEA safeguards agreement, and plutonium containing 80% or more of Pu-238 has been exempted from coverage by IAEA safeguards agreements since

the establishment of the IAEA safeguards system -- a fact presumably well known to the drafters of section 127. Hence exemption of plutonium containing 80 percent Pu-238 is also consistent with section 127(1) of the Act.

6. Whereas the US/Japan agreement contains an explicit requirement for US consent prior to the storage of any US-obligated materials in a specific facility, why does the US/Euratom Agreement not contain a similar requirement?

RESPONSE: The U.S.-Japan agreement does not contain an explicit requirement for U.S. consent prior to the storage of any U.S.-obligated materials in a specific facility. Article 3 provides for prior consent to facilities storing plutonium, uranium 233 and HEU subject to the agreement. The U.S.-Euratom agreement also requires U.S. consent to the facilities for the storage of plutonium, HEU and U-233. This is contained in Article 8.3 of the U.S.-Euratom Agreement. A list of such facilities has been provided to the Congress on a confidential basis.

7. Whereas the US/Japan agreement contains a requirement for US consent prior to the retransfer of any US-obligated material anywhere outside of Japan if the parties agree, why does the US/Euratom Agreement authorize Euratom members to retransfer such material to "third countries" satisfying certain basic nonproliferation credentials?

RESPONSE: The two agreements contain similar provisions on retransfer. In addition to the advance, long-term U.S. approval for Japanese retransfers of U.S.-obligated spent fuel to France and the UK for reprocessing and related activities, the U.S.-Japan Agreement also provides advance, long-term U.S. approval for Japanese retransfers of U.S.-obligated source material and LEU to a designated list of third countries. (Cf. U.S.-Japan Implementing Agreement Article 1(1)(b), Japan Ministry of Foreign Affairs Note Verbale No. 322, and U.S. Embassy Note No. 949.) The U.S.-EURATOM Agreement has a similar provision (Cf. Article 8.1.(c)(i) and Agreed Minute paragraph 2). The mechanics for adding or deleting third countries on the eligible list are slightly different, as is the coverage of specific items eligible for retransfer, but the overall effect is largely the same. See also the answer to question 1 under Retransfers.

8. If Japan requests renegotiation of its accord on the basis of the Euratom agreement, what position would the Administration take?

RESPONSE: As this is very much a hypothetical question, the Administration has taken no position at this time.

Storage

Under what conditions can the US suspend authorization for storage of US-origin Pu and HEU? What specific provisions of the Agreement would the US invoke to effect such suspension?

RESPONSE: As required by section 123 (a)(8), the U.S.-EURATOM agreement accords the U.S. a right to approve the facilities in which weapons-usable nuclear materials obligated to the U.S. will be stored. The agreement (Article 8.3) establishes the conditions that will render these storage facilities acceptable to the United States. It should be underscored that 123 a.(8) does not require a right to approve storage as an "activity" per se, but rather the right to approve the facilities in which the storage is to take place. Further, storage is not an operation that exercising a right of suspension could interrupt in the same sense that exercising such a right could interrupt reprocessing, conversion or fuel fabrication. And in any event, the determinations prescribed by section 131, and the inferred requirement that a right of suspension is a necessary prerequisite for making these determinations on an advance, long-term basis, are not, strictly speaking, applicable to "storage." For these reasons, the agreement's special suspension provisions do not apply to the storage approval. However, the agreement does provide the U.S. with a right to take corrective actions if it is dissatisfied with the conditions under which U.S.-obligated plutonium, HEU or U-233 is stored. The U.S. has the right under the terms of Article 8.3 of the agreement to require consultations with EURATOM if it is not satisfied with the physical protection at a storage site where plutonium, HEU or U-233 subject to the agreement is located. If physical protection is still not satisfactory following such consultations, the U.S. may require that the nuclear material be removed to another facility where the physical protection is up to international standards. These U.S. rights are the functional equivalent of a suspension right, and are even superior to such a right in the sense that they provide concrete practical measures for dealing with situations in which the requisite standards for storage are not being satisfied at a particular facility.

Advance Consents:

1. Would the addition by Euratom of a new fuel cycle facility to Euratom's list of fuel cycle facilities become effective in the absence of acknowledgment by the US? Can the US delay acknowledgment beyond 30 days or indefinitely?

RESPONSE: The U.S. has an obligation to provide the acknowledgement within 30 days of receipt of the notification. So far as the U.S. is concerned, therefore, the acknowledgement will always be given within the required time-frame. Moreover, we have assured EURATOM that the U.S. does not view the notification/acknowledgement procedure as a means effectively to veto addition of new facilities.

2. In general, are there any nuclear activities that would never be subject to advance consents?

RESPONSE: Neither U.S. law nor U.S. policy precludes in principle advance consent to any particular nuclear activity. Whether the U.S. would give its advance consent to a given activity would depend on the U.S. assessment of the non-proliferation and national security implications, considering as important factors the safeguards and physical protection arrangements for the activity in question.

Suspension/Termination

1. What events, other than those set out in Para. 8 of the Agreed Minute, would justify suspension of authorization for reprocessing in Euratom? Does Euratom agree that such events would constitute grounds for suspension? What happens if Euratom does not agree?

RESPONSE: We cannot anticipate in advance specific actions or events beyond those listed in paragraph 8 of the Agreed Minute which could lead the U.S. to suspend its consent to reprocessing or alteration in form or content of U.S.-obligated material. The U.S. right to suspend its consent is unilateral, however. If the Europeans assert that the grounds for suspension are not justified, then consultations would take place in accordance with paragraph 8.B of the Agreed Minute and Article 12 of the Agreement. Once the U.S. makes a decision, however, the suspension is effective until the situation is resolved.

2. Why did the US agree in Para. 5 of the Agreed Minute to modify the terms of its subsequent arrangement relating to the return of separated plutonium to Japan so as to impose new conditions on itself for suspension of that arrangement? Does the Administration agree that prior to such modification our ability to suspend was largely unrestricted? Were the modifications requested by the Europeans or by the Japanese?

RESPONSE: Paragraph 5 of the Agreed Minute gives the U.S. the unilateral right to suspend its consent to retransfers of U.S.-obligated Japanese-owned plutonium from EURATOM to Japan if the U.S. determines that such retransfers would result in a significant increase of the risk of proliferation or a serious threat to the security of the United States. In addition, under the terms of the U.S-Japan agreement for peaceful nuclear cooperation such retransfers may only take place pursuant to a transportation plan that has been established with the cooperation and assistance of the United States.

The July 18, 1988 U.S.-EURATOM exchange of notes, which constitutes the subsequent arrangement approving the plutonium retransfers, on its face permits the U.S. to withdraw its advance, long-term approval of the retransfers for any reason. However, the suspension provision in the 1988 U.S.-EURATOM exchange of notes is only superficially discretionary. Under the U.S.-Japan Implementing Agreement [Article 1.3.(a)], the U.S. agrees to give its consent under the U.S.-EURATOM agreement to these retransfers, and may suspend this agreement (i.e., the undertaking it has made to Japan) only to prevent a significant increase in the risk of nuclear proliferation or in the threat to U.S. national security [U.S.-Japan Implementing Agreement, Article 3.2]. Thus the U.S. has an obligation under the U.S.-Japan Agreement to give EURATOM its approval for the retransfers unless the proliferation/security standard is not met. Paragraph 5 of the Agreed Minute to the new U.S.-EURATOM agreement merely carries this standard over into the U.S.-EURATOM agreement itself in an explicit way, as requested by the EURATOM negotiators. But the standard is not new; it has existed right from the beginning in 1988.

3. If the US took action to suspend authorization for reprocessing activities, would that result in any restriction on the reprocessing of US-origin material present in Euratom prior to December 31, 1995? What is the current amount of this material? Approximately what percent of the material likely to be reprocessed in Euratom over the next 10 years consists of this material?

RESPONSE:

a) If EURATOM availed itself of the option provided in paragraph 13 of the Agreed Minute, there would be no restriction on reprocessing of nuclear material previously subject to the expired U.S.-EURATOM Agreement. However, the U.S. would retain a right to approve the reprocessing of all nuclear material in EURATOM formerly subject to the terminated U.S. agreements with Austria, Finland, Portugal, Spain and Sweden.

b) As of 12/31/95, approximately 5,600 tons of U.S.-obligated spent fuel resides in Euratom and is potentially available for reprocessing.

c) The 5,600 tons of U.S.-obligated spent fuel residing in Euratom as of 12/31/95 represents approximately 15 percent of the material likely to be reprocessed in Euratom over the next 10 years.

4. If safeguards and physical security problems should be identified at any specific fuel cycle facility in Euratom, is there any way the US could suspend authorized activities at that facility alone, without disrupting fuel cycle activities of the same type generally within Euratom? If so, how?

RESPONSE: Under Article 8.3 of the U.S.-Euratom agreement, if the U.S. believes that adequate physical protection is not being maintained, i.e., at the levels of physical protection set out in Annex C to INFCIRC 254/Rev 1/Part 1, at any facility storing U.S.-obligated HEU, plutonium or U-233, it may call for immediate consultations. If corrective measures are not taken to restore the levels of physical protection referred to above at the facility in question, the U.S. may require that the nuclear material at that facility be retransferred for storage at another facility which has been approved for storage by the U.S. Since Article 8.3 covers all facilities where U.S.-obligated plutonium, HEU and U-233 is stored, U.S. rights as described above are broad and can be directed at one or more facilities where physical protection problems may be identified.

Paragraph 8(A) of the Agreed Minute provides the U.S. with the right to suspend its consent to reprocessing and alteration in form or content of U.S.-obligated materials if it determines that the continuation of its consent would entail a serious threat to its security or a significant increase in the risk of proliferation. If the U.S. determined that a physical protection or safeguards problem met that standard, it could suspend its consent in accordance with Article 8.A of the Agreed Minute. Such suspension must apply to all reprocessing and alteration in form or content of U.S.-obligated nuclear material "taken as a whole". In other words, the suspension would apply to all Euratom reprocessing and MOX fuel fabrication activities involving U.S.-obligated nuclear material.

Article 13 provides that the U.S. may cease further cooperation and suspend or terminate, in whole or in part the Agreement, if Euratom were to take any action involving a material violation of its obligations under the Agreement, including those relating to safeguards and physical protection.

5. To "prevent a significant increase in the...threat to its national security," the US may under the US/Japan Agreement suspend its consent for activities relating to reprocessing or alteration of material in form or content, storage, retransfers beyond the territorial jurisdiction of Japan, and the return of recovered plutonium. (Implementing Agreement, Articles 1 and 3(2)). In the new US/Euratom agreement, the US -- on the basis of "objective evidence" of "a serious threat to the security" of the United States -- may suspend its consent for activities relating to reprocessing and alteration of material in form or content. (Agreed Minute, Para. 8.A and Article 8(2) of the Agreement). Questions:

(a) Is there a substantive difference between America's authority under the Japan Agreement to suspend its consent to "prevent a significant increase" in the threat to the US, and America's authority under the Euratom agreement to suspend consent based on "objective evidence" that the continuation of an activity "would entail a serious threat" to the US? To prevent a significant increase in the threat to US national security, does the US/Japan Implementing Agreement require the US to have "objective evidence" of such a threat before it can suspend its consent for the activities in Art. 1 of that agreement?

RESPONSE: There is no substantive difference between the standards for suspending U.S. consent in the U.S.-Euratom and U.S.-Japan agreements. The U.S.-Euratom agreement uses the term "objective evidence" as a basis for suspending such consent, while the U.S.-Japan agreement does not. However, the provisions of the U.S.-Japan Implementing Agreement, the context in which they are written and the negotiating history of the agreement make it clear that the U.S. is obliged to act as a reliable trading partner, may not suspend its consents for arbitrary and capricious reasons and can only exercise its suspension rights on justifiable nonproliferation or national security grounds. These factors mean that the U.S. could only suspend its consent to Japan on the basis of "objective evidence."

(b) Does the US have authority in the Euratom Agreement, as it has in the Japan Agreement, to suspend consents concerning the storage of US-obligated materials in Euratom, retransfers outside of Euratom, or the return of recovered plutonium to Euratom, on the specific basis of a US national security threat?

RESPONSE: For storage of U.S.-obligated materials, both the U.S.-Japan and U.S.-Euratom agreements provide the U.S. with rights to approve facilities where U.S.-obligated plutonium, HEU and U-233 are stored. (On U.S. rights with respect to storage, see answer to question on storage above).

With respect to retransfers, the U.S. has a right to suspend retransfers of U.S.-obligated items outside of Euratom. Paragraph 4 of the Agreed Minute provides the U.S. with the right to delete third countries from the list of countries eligible for receiving U.S.-obligated items from Euratom. The U.S. may delete a third country for any reason. Paragraph 5 of the Agreed Minute gives the U.S. the right to suspend its consent to retransfer U.S.-obligated plutonium to Japan if such a retransfer poses a serious threat to U.S. security or a significant increase in the risk of proliferation.

With respect to the return of recovered plutonium to Euratom, the U.S.-Euratom agreement has no provision which is relevant to this issue. Euratom performs its own reprocessing and MOX fabrication and has no plans to retransfer U.S.-origin spent fuel to third countries for reprocessing. If Euratom were ever to consider this in the future, the U.S. would consult with Euratom on whether and under what conditions such transfers for reprocessing and return of the recovered plutonium could take place. Any such request would be treated as a subsequent arrangement pursuant to section 131 of the Atomic Energy Act.

(c) To the extent that there are differences in these agreements as described above, what are the implications of these differences for the US commitment of equal treatment to Japan?

RESPONSE: There are of necessity many differences between the U.S.-Euratom and U.S.-Japan agreement. On the implications for the U.S.-Japan agreement, see the answer to question 8 of the Committee of February 28.

<u>European Unification</u>

1. How would the emergence of an all-European nuclear deterrent force affect the consents and approvals under this Agreement, with particular reference to the distinction between nuclear-weapon and non-nuclear-weapon states?

RESPONSE: Without specific information on the nature of the "all-European nuclear deterrent force," it is difficult to provide a definitive answer. However, if emergence of such a force resulted in a violation of the NPT or of a full-scope safeguards agreement between non-nuclear weapon state EURATOM member states and the IAEA, the U.S. would have a right to cease cooperation under the Agreement, suspend its advance consents, and take other remedial actions.

2. How would the acquisition by non-nuclear-weapon states in Europe of control over nuclear weapons affect the implementation of this agreement?

RESPONSE: Acquisition of such control by EURATOM non-nuclear weapon states would place them in violation of the NPT. This would constitute specific grounds for suspension of the advance consent arrangements in paragraph 8.2 of the Agreement (Agreed Minute 8.A.(a)(iii)). Insofar as such a step would also entail termination or abrogation of a safeguards agreement with the IAEA, it would also be grounds for the U.S. to cease further cooperation under the Agreement, suspend or terminate the Agreement, and invoke the right of return (Article 13).

Dual-Use Facilities

Are there any circumstances in which US-origin materials could be processed, stored or utilized in a fuel cycle facility inside Euratom at the same time as materials intended for military and/or explosive uses are also being processed, stored or utilized in such facilities? If so, what protections are in place to ensure that the two are not commingled in any way?

RESPONSE: There are no provisions in the U.S.-Euratom agreement which prohibit either party from commingling military and civilian nuclear materials. Moreover, there is no need for such a provision. Article 7 of the U.S.-Euratom agreement provides:

> "1. Cooperation under this Agreement shall be carried out for peaceful purposes.
>
> "2. Non-nuclear material, nuclear material and equipment transferred pursuant to this Agreement and special fissionable material used in or produced through the use of such items shall not be used for any nuclear explosive device, for research on or development of any nuclear explosive device or for any military purpose."

U.S.-obligated nuclear material is tracked and inspected by the Euratom safeguards authorities to verify this obligation.

Accountability in Europe

1. To what extent does the European Parliament assess or oversee the effectiveness of Euratom safeguards?

2. Are Euratom officials obligated to provide the European Parliament with detailed information about the implementation of safeguards within the Union?

3. Do the national accounting agencies within the countries with the largest holdings of plutonium and highly-enriched uranium -- in particular, Britain, France, Germany, and Belgium -- currently have full access to national records concerning the production, storage, transportation, and use of such materials within those countries?

4. Which types of data does Euratom currently provide the European Parliament on a routine basis concerning its activities? Is this information accessible to the public?

RESPONSE (Questions 1-4): We have asked the EU Commission to supply certain background information to assist us in providing answers to these questions. As soon as this information is received, we will provide our answers under separate cover.

Physical Security

With respect to the Department's reply to the question I submitted after the hearing of February 28 pertaining to physical security -- (a) Why does the Department consider any unilateral strengthening of US physical security standards over the next 30 years as a "highly unlikely event"? (b) Where in the Agreement is there any "guaranty," as required by sec. 123(a)(6) of the Atomic Energy Act, that Euratom will maintain "adequate physical security" as defined by the NRC under that Act?

RESPONSES:

(a) In answer to question 6 of the Committee of February 28, the Department indicated that it would be highly unlikely that the U.S. would amend its domestic physical protection standards without corresponding changes in international standards. We do not at present foresee a need to alter existing physical protection standards. (Note that we are speaking of standards or criteria, not the application of specific measures at particular facilities.) Were we ever to consider changing the physical protection standards in the U.S., there would be a corresponding need to amend the standards in all countries where U.S.-obligated nuclear material is present. We have always worked on a cooperative basis to ensure adequate standards of physical protection on a worldwide basis and expect to do so in the future.

(b) Paragraph 1, Article 11 of the agreement provides that all nuclear material subject to the agreement "shall be subject to adequate measures of physical protection." Paragraph 2 of Article 11 provides that "Such physical protection measures shall be at levels which shall satisfy the criteria set out in Annex C to IAEA document INFCIRC 254/REV 1/Part 1." The NRC regards the international criteria specified in that IAEA document as the equivalent of NRC physical protection standards.

U.S.-Euratom Agreement

Supplementary Response to Questions Submitted to
Fred McGoldrick
U.S. Department of State
By Senator John Glenn
Ranking Member
Committee on Governmental Affairs
United States Senate

Accountability in Europe

1. To what extent does the European Parliament assess or oversee the effectiveness of Euratom safeguards?

RESPONSE: We are informed by European Commission officials that the European Parliament may assess the effectiveness of Euratom safeguards by reviewing the Commission's periodic safeguards report (see answer to question 4 below) during meetings of parliamentary committees where Commission officials may be invited to attend, and by posing written or oral parliamentary questions.

2. Are Euratom officials obligated to provide the European Parliament with detailed information about the implementation of safeguards within the Union?

RESPONSE: We understand that the Commission provides the European Parliament with detailed information about the implementation of safeguards within the European Union. Obligations are based on rules laid down in the Euratom Treaty and procedures established by the Commission and other institutions.

3. Do the national accounting agencies within the countries with the largest holdings of plutonium and highly-enriched uranium -- in particular, Britain, France, Germany, and Belgium -- currently have full access to national records concerning the production, storage, transportation, and use of such materials within those countries?

RESPONSE: Commission Regulation No. 3227/76 obliges all operators to provide to their national authorities a copy of all reports and notifications they have to submit to the European Commission. In addition, we are informed that operators of nuclear installations provide their national authorities with further data on plutonium and highly enriched uranium as required by national legislation.

4. Which types of data does Euratom currently provide the European Parliament on a routine basis concerning its activities? Is this information accessible to the public?

RESPONSE: According to Commission officials, the European Parliament is provided every two or three years with a report on the operation of Euratom safeguards. Among other things, the report contains information on the applied safeguards methodology, the type and number of installations that have been inspected in the reporting period, and the invested inspection effort. In addition, the report provides information about safeguards findings, the issues under discussion or under consultation with national authorities and with the International Atomic Energy Agency (IAEA), and other topics of particular interest. Besides this report, the Commission frequently answers specific questions posed by Members of the European Parliament in their official capacity on matters related to Euratom safeguards. Both reports and answers to parliamentary questions are accessible to the public.

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